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Version: Version of Record

Link(s) to article on publisher's website:

<http://dx.doi.org/doi:10.21954/ou.ro.0000e7e1>

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OXFORD DOCTORAL COURSE IN CLINICAL PSYCHOLOGY

The Pressure Of Parenting - Does It Predict Attachment?

**A study of the contribution of
maternal parenting stress and
family functioning to infant attachment.**

**Nicola Ward
B.A., M.A.**

July 2001

Approximate number of words: 25,000

**Dissertation submitted in partial fulfillment of the Open University
Validation Service / British Psychological Society
Doctorate in Clinical Psychology**

ABSTRACT

Objective: To investigate whether maternal levels of parenting stress and maternal report of family functioning measured during an infant's first year predict infant attachment in the second year. Previous studies have demonstrated a concurrent relationship between these two factors and infant attachment, but not a predictive one.

Design: Prospective.

Method: Participants were 104 mothers and their 17-month old infants who were already part of a large prospective study of normal infants. Demographic information was collected when the infants were 3 months old. The Parenting Stress Index (Short Form) and the General Functioning Scale of the Family Assessment Device were completed by the mother at 10 months. At 17 months the mother and her infant took part in the Strange Situation procedure to assess attachment.

Results: Neither parenting stress nor family functioning predicted attachment when the data from the whole sample were analysed. However, in a subgroup of mothers reporting high parenting stress, higher levels of parenting stress predicted an ambivalent infant attachment. In addition, poor family functioning also predicted an ambivalent attachment in a subgroup of mothers scoring at or above the clinical cut-off for family functioning.

Conclusions: Mothers in this study did not find parenting very stressful - this may explain the failure to confirm the hypotheses in the full sample. The fact that, above a certain threshold, parenting stress did affect later infant attachment indicates that different processes may operate in mothers with high and low levels of parenting stress.

ACKNOWLEDGEMENTS

My thanks go to everyone who helped make this project possible, particularly all the mothers who travelled to the lab in their spare time and allowed me to make their babies cry! Thanks also to all the assistants who acted as strangers.

My thanks go to the staff of the Families, Children and Child Care Study for all their help and support. Special thanks go to Dr. Catherine Baillie and Professor Kathy Sylva for their supervisory expertise.

Thanks also to Dr. Paul Griffiths and Dr. Myra Cooper for their help and useful feedback.

Lastly a big thank you goes to Gareth for putting up with me not only during my dissertation but also through all of the last three years, and for selflessly proof reading everything I throw at him.

CONTENTS

	Page number
1. INTRODUCTION.....	6
1.1 Overview.....	7
1.2 Attachment.....	7
1.21 Attachment theory.....	7
1.22 Assessing attachment.....	9
1.23 Later consequences of attachment relationships in infancy.....	11
1.24 Predictors of attachment.....	13
1.3 Parenting stress.....	17
1.31 Parenting stress - what it is and how it is measured.....	17
1.32 Linking parenting stress to attachment.....	19
1.33 Parenting stress and Strange Situation classifications.....	22
1.34 Overall level of parenting stress - does it matter?.....	24
1.4 Family functioning.....	25
1.41 Family functioning - what it is and how it is measured.....	26
1.42 Family functioning and parenting stress.....	27
1.43 Family functioning and attachment.....	28
1.5 Linking all three variables together.....	30
1.6 Rationale for the present study.....	31
1.7 Hypotheses.....	33
2. METHOD.....	34
2.1 Design.....	35
2.2 Participants.....	35
2.3 Measures.....	36
2.31 Socio-economic classification.....	37
2.32 Parenting Stress Index - Short Form.....	37
2.33 Family Assessment Device - General Functioning Scale.....	38
2.34 The Strange Situation.....	39
2.4 Procedure.....	42
2.5 Ethical issues and ethical approval.....	44
3. RESULTS.....	46
3.1 Sample size.....	47
3.2 Characteristics of the sample.....	47
3.21 Infant characteristics.....	47
3.22 Family characteristics.....	48
3.23 Maternal characteristics.....	48
3.3 Infant attachment.....	49
3.4 Investigation of hypotheses.....	49
3.41 Data analysis.....	49
3.42 Characteristics of the high PSI-SF subgroup.....	51
3.43 Hypothesis 1.....	52
3.44 Hypothesis 2.....	57
3.45 Hypothesis 3.....	60

4. DISCUSSION.....	61
4.1 Summary of research findings.....	62
4.11 Characteristics of the sample.....	62
4.12 Attachment.....	62
4.13 Parenting stress.....	63
4.14 Investigation of the hypotheses.....	63
4.15 Secondary analysis of the data.....	63
4.2 Methodological considerations.....	64
4.21 Sample size.....	64
4.22 Characteristics of the sample.....	64
4.23 Measures.....	65
4.3 Interpretation of research findings.....	68
4.31 Explanation for low overall levels of parenting stress.....	68
4.32 Explanation for the failure to confirm the hypotheses with the whole sample - predictive versus concurrent relationships.....	68
4.33 Tentative support for Deater-Deckard's hypothesis.....	69
4.34 Partial support for research hypotheses.....	70
4.35 Why do high levels of parenting stress predict ambivalent infant attachment in the high parenting stress subgroup?.....	70
4.36 Why does poor family functioning predict ambivalent infant attachment in the subgroup with poor family functioning?.....	74
4.37 Why isn't the parental stress level of mothers or their family functioning predictive of insecure-avoidant attachment?.....	75
4.4 Key findings.....	77
4.5 Limitations and ideas for future research.....	80
4.6 Clinical and service implications.....	81
4.61 Early intervention.....	83
4.62 Implications for adult services.....	84
4.7 Conclusions.....	85
5. REFERENCES.....	86
6. APPENDICES.....	103
Appendix 1.....	105
Appendix 2.....	110
Appendix 3.....	113
Appendix 4.....	114
Appendix 5.....	116
Appendix 6.....	117
Appendix 7.....	118
Appendix 8.....	119
Appendix 9.....	120
Appendix 10.....	121
Appendix 11.....	123

Section 1

INTRODUCTION

Section 1: INTRODUCTION

1.1 Overview

This study aims to investigate whether the type of emotional attachment that infants form with their mothers by their second year can be predicted from the levels of parenting stress experienced by the mothers during the first year of the infants' lives. It also considers whether the functioning of the family unit influences the relationship between parenting stress and attachment. Section 1 first outlines what is meant by mother-infant attachment, and how it is measured. It then goes on to consider why attachment is of interest to clinical psychologists, and outlines the variables that have been demonstrated to predict security of infant attachment to date. There follows an introduction to the concept of parenting stress, and research into the relationship between parenting stress and attachment is critically evaluated. Lastly, the role of family functioning as a possible mediator of the relationship between parenting stress and attachment is discussed. Links between family functioning and parenting stress, and between family functioning and attachment are considered. Section 1 concludes with the rationale for the current study, the aims, research questions and hypotheses.

1.2 Attachment

1.21 Attachment theory

John Bowlby's (1969) theory of attachment is now regarded by many as paramount in explaining many areas of children's development. Bowlby was a clinician whose ideas about attachment initially arose from his work on maternal deprivation. He was

attempting to find links between major life events such as parental loss or neglect and the development of psychiatric symptoms in children and adults. He originally developed attachment theory for use in the diagnosis and treatment of patients and families. However, its usage hitherto has been mainly in research in developmental psychology. More recently though, authors are beginning to consider further the clinical implications of attachment theory, and its applications in mental health settings (e.g. Belsky & Nezworski, 1988).

Attachment theory draws heavily on ethological concepts. It postulates that children develop bonds (attachments) with primary care-givers (notably the mother) that serve the biological function of survival. This bond causes them to seek proximity to that individual, so that their needs can be satisfied and they can be protected from danger. The attachment figure also provides a 'secure base' from which the child can venture out to explore the world, or return to if he or she feels in danger. Bowlby (1988) stated that

"All of us, from the cradle to the grave, are happiest when life is organised as a series of excursions, long or short, from the secure base provided by our attachment figures."

Children can develop either secure or insecure attachments to caregivers. In the former, the caregiver responds appropriately to the child's signals, providing them with their emotional and biological desires in terms of attention, food, protection, and so on. In the latter condition, inconsistent or inappropriate responses from the attachment figure, or an absence of response to the child's signals, lead the child to feel 'insecure' about the

relationship. An attachment to the primary caregiver develops during the first year of life, and can endure for the entirety of the life-cycle. From this primary relationship the child forges a working model of the self and others, and this model, although subject to change, exerts an active influence on the child's relationships throughout life.

1.22 Assessing attachment

In 1978 Mary Ainsworth and colleagues devised a laboratory method of assessing the quality of the attachment relationship between infants and their mothers known as the 'Strange Situation' (Ainsworth, Blehar, Waters & Wall, 1978). The Strange Situation is now the most commonly used assessment of attachment security, and has been shown to be both a reliable and valid measure (see Method section for discussion of reliability and validity). The procedure is based on assumptions about exploratory behaviour. Once an attachment is established, it is thought that the infant uses the mother as a 'secure base' from which to explore the environment. If an apparent danger arises, or the distance from the mother increases to an intolerable level, the attachment system is reactivated and the infant will attempt to re-establish contact by moving toward the mother, establishing eye contact, or emitting attachment behaviour such as calling or crying. Consequently, separating the young child from its mother (as happens in the Strange Situation procedure) activates the attachment system. This allows us to observe the quality of the attachment by looking at how the infant reacts both when separated from and when reunited with the mother.

Different types of attachment lead the infant to behave in different ways. Ainsworth

classified these behaviours into three categories. In the first, known as *Anxious avoidant* (A), the infant has no confidence that when it seeks care it will be responded to helpfully. This is the result of the mother continually rebuffing the child's approaches, and means that when the child is reunited with the mother he/she will avoid proximity or interaction with her.

The pattern of attachment consistent with healthy behaviour is that of *Secure* (B) attachment. These infants actively seek proximity or contact on reunion, and have little tendency to resist this contact. They are confident that their attachment figure will be responsive when called upon.

Anxious resistant or Anxious ambivalent (C) infants (hereafter referred to as ambivalent) will seek and yet resist contact with the mother on reunion. This is because the infant is uncertain whether the mother will be responsive when called upon, due to previous inconsistencies in her responses. Because of this uncertainty the child is always anxious about exploring the world and tends to be clingy.

A fourth category has been added more recently (Main & Solomon, 1986). *Disorganised attachments* (D) occur when there has been a breakdown of an organised strategy following an irreconcilable conflict between the need for proximity and fear of the caregiver, often as a result of maltreatment of the infant. When reunited with the attachment figure the infant may display contradictory behaviours, freezing/ stilling, misdirected movements, apprehension and disorientation.

Anxious avoidant, ambivalent and disorganised attachments are collectively known as insecure attachments.

It should be noted that the types of attachment outlined above in no way represent clinical conditions. Insecure attachment classifications are not equivalent to psychiatric diagnoses. The Strange Situation procedure is a highly structured experimental paradigm, and the attachment classifications derived from it merely represent different ways of behaving in this specific artificial situation. However, since the Strange Situation was developed, many people have looked at whether these different attachment classifications in infancy are related to differences in later development.

1.23 Later consequences of attachment relationships in infancy

Much research has been conducted into the consequences of attachment relationships for later development in order to determine the clinical significance of the different attachment classifications. Bowlby himself proposed that disturbances of the attachment relationship are the main cause of psychopathology characterised by chronic anxiety or distrust (Bowlby, 1982). He felt that the infant's pattern of attachment started them on a particular developmental pathway:

"...the pathway followed by each developing individual and the extent to which he or she becomes resilient to stressful life events is determined to a very significant degree by the pattern of attachment developed during the early years" (Bowlby, 1988).

Forming an insecure attachment has now been repeatedly demonstrated to be a risk factor for later psychopathology. For example, Greenberg, Speltz, Deklyen & Endriga (1991) found that 80% of pre-schoolers with oppositional defiant disorder had insecure attachments; Lewis, Feiring, McGuffog & Jaskir (1984) found a greater risk for pathology in insecurely attached boys than securely attached boys; and Erickson, Sroufe & Egeland (1985) found that insecure attachment relationships were associated with a higher risk of later behavioural problems than secure attachment relationships. More recently Moss, Rousseau, Parent, St-Laurent & Saintonge (1998) found that security of attachment measured at 5-7 years significantly predicted the likelihood of teacher reported behaviour problems 2 years later in 121 school-age children.

Fonagy (1999) argues that an insecure attachment may undermine the acquisition of mentalising capacity (the ability to envision mental states in self and others). He feels that a secure attachment is crucial in the acquisition of morality and the understanding of the other's point of view. His view is that the developmental challenge of creating a coherent internal working model of relationships may be compromised by sub-optimal parenting and the difficulty thus created for the child may result in disruptive behaviour. Fonagy also states that borderline personality disorder may be a consequence of inhibited mentalising. In accordance with this theory he has shown that disordered attachment patterns and a reduced capacity to envision the mental states of others are common in people with borderline personality disorder.

However, as authors such as Sroufe (1988) emphasise, the basic assumption guiding attachment research is not that the relationship between mother and infant *inevitably* affects later development, but rather that the child's initial relationship experience with the mother *probabilistically predicts* later social development because it affects his/her expectations about others and relationships, feelings about the self, and social skills. In other words, the initial attachment relationship affects the child's view of himself and others, and consequently there is a *likelihood* (as opposed to a certainty) that his later social development will be affected by the nature of the attachment.

1.24 Predictors of attachment

The literature suggests that a multitude of factors influence attachment formation. Ultimately it would be of enormous clinical value if we could determine what *causes* a child to be securely attached. However, it is almost impossible for researchers to determine causes. More often, the nearest we can get is to look at what *predicts* a certain outcome. An ability to predict which children are likely to become insecurely attached would be of clinical value, as this information could be used to target interventions at those children thought to be at risk for the development of potentially adverse attachment relationships, and later psychopathology.

Several studies have tried to find predictors of attachment in infants. In order to look at predictive relationships, studies must be longitudinal in design. Authors have looked at the influence of maternal, infant and family characteristics on the development of the attachment relationship.

Maternal characteristics

There is a growing body of evidence that maternal characteristics can influence the development of the attachment relationship. These factors may influence, or be a reflection of, how the mother parents the child. Bowlby (1988) stated that:

"in underlining the very great influence that a child's mother has on his development, it is necessary also to consider what has led a mother to adopt the style of mothering she does" (p126).

One influence is the form of mothering she herself received as a child, and indeed mother's own attachment status in respect to her own parents has been shown to predict later infant attachment to the mother (e.g. Benoit & Parker, 1994; Fonagy, Steele, Moran, Steele & Higgitt, 1993; Fonagy, Steele & Steele, 1991).

In addition mothers' sensitivity to the infants' cues (maternal sensitivity) has been shown to predict attachment (e.g. Ainsworth *et al*, 1978; Benn, 1986; Braungart-Rieker, Garwood, Powers & Wang, 2001; Garwood, 1998; Pederson, Moran, Sitko, Campbell, Ghesquire & Acton, 1990; Susman-Stillman, Kalkose, Egeland & Waldman, 1996). Initially Ainsworth *et al* found a strong relationship between maternal sensitivity and security of attachment, and consequently the authors concluded that maternal sensitivity was the crucial factor in developing a secure attachment. More recently other authors have also found a relationship between these two variables, though no studies have found as strong a correlation as in the original Ainsworth *et al* study. For example, Susman-Stillman *et al* (1996) found that level of maternal sensitivity to the infant's cues measured at 6 months predicted attachment security at 12 months. More recently Braungart-Rieker

et al (2001) also found that maternal sensitivity at 4 months predicted attachment security at 12 months. However, despite the fact that maternal sensitivity appears to consistently predict attachment security, variations in maternal sensitivity do not account for all the variation in attachment security. Both Goldsmith & Alansky (1987) and de Wolff & van Ijzendoorn (1997) have performed meta-analyses of the effects of maternal sensitivity on attachment and found average effect sizes of $r=.16$ and $r=.24$ respectively. These effect sizes are only small to medium; consequently they imply that other factors must be responsible for the remaining part of the variance in attachment security.

Infant characteristics

There is some debate in the literature as to the influence of infant temperament on attachment. Studies have not consistently found a direct relationship between measures of infant temperament and later attachment. Sroufe (1985) suggested that this is because temperament influences behaviour in the Strange Situation but not security of attachment. Research supports the idea that temperament distinguishes infants within attachment classifications but does not directly influence security. For example, Susman-Stillman *et al* (1996) found that infant temperament at 3 and 6 months predicted the *type* of insecurity displayed at 12 months, and Braungart-Rieker *et al* (2001) found that infant affect regulation (ability to recover from distress by regulating one's emotions) measured at 4 months discriminated between attachment subcategories measured at 12 months.

Family characteristics

Some studies have also included measures of family characteristics. For example, Speltz, Endriga, Fisher & Mason (1997) looked at predictors of attachment in infants with cleft lip and/ or palate. For the (normal) comparison group, maternal and family characteristics, but not infant factors, significantly predicted insecure attachment at 12 months. For the cleft group, infant and maternal characteristics measured at 3 months, but not family characteristics, were predictive.

The ability of several different variables to predict attachment classification implies that mother-infant attachment is determined by a complex interaction of mother, infant and family characteristics. Both members of the dyad, and the context in which that dyad exists, contribute in unique ways to the prediction of attachment security. The consistent and accurate prediction of attachment security is likely to involve the complex interaction of a large number of variables. This idea fits with Belsky's (1984) suggestion that parenting is multiply determined by three major sources of influence (child characteristics, parent characteristics and social-contextual factors), and that factors from each source may interact in promoting children's outcomes such as attachment security.

This study attempts to investigate the contribution of two particular maternal and family characteristics to the prediction of attachment security.

1.3 Parenting stress

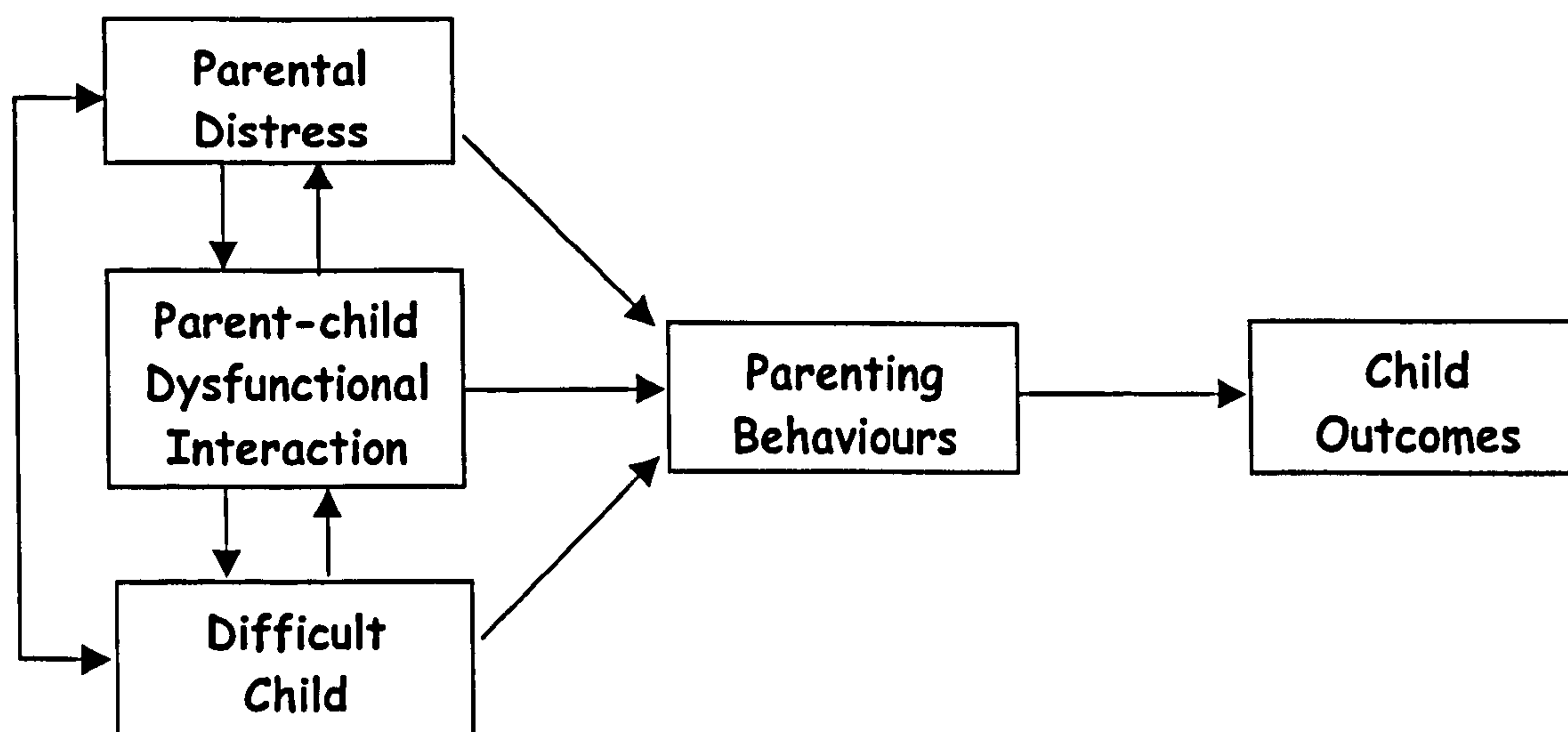
This study was designed to look at whether stress experienced in the parenting role during the infant's first year influences the quality of the mother-child relationship during the infant's second year. This section outlines what parenting stress is and how it may be related to mother-infant attachment.

1.31 Parenting stress - what it is and how it is measured

Parenting stress is defined by Deater-Deckard (1998) as “the aversive psychological reaction to the demands of being a parent” (p315). It is experienced as negative feelings toward the self and the child. A questionnaire has been developed for measuring this concept - it is known as the Parenting Stress Index or PSI (Abidin, 1995). The 120 items on this questionnaire are organised into two domains - child characteristics and parent characteristics. A short form has also been produced which is much quicker to administer (Abidin, 1995). Known as the PSI-SF, this measure consists of 36 items taken from the long version of the PSI. It is organised into three subscales - Parental Distress, Parent-Child Dysfunctional Interaction and Difficult Child.

Abidin's (1995) model (see Figure 1 below) proposed a mechanism for the influence of parenting stress on children's behaviour - he hypothesised that higher amounts of parental distress, child difficulty and parent-child dysfunctional interactions lead to increases in negative, authoritarian parenting. This parenting style has a negative impact on the child's behaviour, causing an increase in behavioural adjustment problems.

Figure 1: Theoretical model for the Parenting Stress Index- Short Form (PSI-SF).



Using the PSI several authors have explored the relationship between levels of parenting stress and child outcomes. Deater-Deckard & Scarr (1996) found support for Abidin's model - in their study of 589 married couples with young children, higher amounts of parenting stress on the PSI-SF were correlated with more authoritarian parental discipline behaviour, which was in turn correlated with more behaviour problems among children. Other correlational studies have reported high scores on the Parenting Stress Index among physically abusive mothers (Mash, Johnston & Kovitz, 1983; Chung Chan, 1994), and with mothers of children with behaviour problems (Mouton & Tuma, 1988). Specifically, research has found that children who exhibit highly disruptive behaviours associated with conduct and attention deficit disorder are likely to have parents who have high levels of parenting stress (Mash & Johnston, 1983).

Clinicians have thus begun to look at ways to reduce parenting stress through cognitive and behavioural therapies and/or parent education (e.g. Telleen, Herzog & Kilbane,

1989). Reducing levels of parenting stress is important not only for improving the psychological health of the parent but also because it may improve the efficacy of interventions that are targeted at the child's behaviour problems.

1.32 Linking parenting stress to attachment

Authors such as Jarvis & Creasey (1991) have theorised that parenting stress may influence child outcome (e.g. behaviour) specifically via its early effects on the development of the attachment relationship between the mother and the child. A high level of parental stress may affect parenting behaviour by rendering the mother psychologically unavailable to the infant. As previously outlined, the chief requirement of a secure attachment is the availability of a warm responsive caregiver. Parental stress may thus decrease maternal responsiveness, and impede the formation of a secure attachment.

As longitudinal predictive studies take months or years to conduct, most research in this area has investigated concurrent relationships between parenting stress and attachment. The majority of the studies have used a questionnaire measure known as the Attachment Q-sort (Waters & Deane, 1985) to assess mother-infant attachment. A negative correlation between scores on the PSI and the security of attachment relationships measured concurrently using the Attachment Q-sort has been repeatedly demonstrated - i.e. high scores on the PSI are correlated with more insecure attachments (Hadadian & Merbler, 1996; Jarvis & Creasey, 1991; Nakagawa, Teti & Lamb, 1992; Pederson *et al*, 1990; Teti, Nakagawa, Das & Wirth, 1991; White, 1998).

A crucial point is that the presence of a correlation between these two measures does not in itself provide evidence for the directional nature of the influence of parenting stress on attachment. It may be:

- a) that mothers who find parenting stressful are more likely to form poor attachments with their children, or
- b) that insecurely attached children are more stressful to parent (as mothers do not have harmonious relationships with their children), or
- c) that both mechanisms operate.

However, although the above studies have demonstrated a relationship between attachment and parenting stress, there are problems associated with the use of the Q-sort questionnaire as a measure of attachment. The Attachment Q-sort (or AQS) is a 90 item instrument based on Q-methodology, describing different types of infant behaviours. Items are first sorted as being most like, neutral, or unlike the infant being considered. Each group of items is then sorted into three clusters, and items are assigned scores ranging from 1 to 9. An attachment security score is calculated by performing correlations between individual items and criterion scores describing the prototypically 'secure' infant. Thus the AQS provides a continuous measure of attachment security.

The advantages of using this method are that it can be completed by either the mother or an observer, and that it samples behaviour in an everyday setting. But there are disadvantages associated with this measure:

Using the mother as a rater

Often (as in Teti *et al*'s (1991) study) the mother is asked to complete the measure as she has access to a wider variety of infant behaviours, sampled in more varied contexts, than an observer would. Yet the results of recent research lead us to question whether mothers' AQS security scores in fact reflect the construct of attachment security. Mothers' and observers' scores of the same infants only correlate moderately (e.g. mother-observer agreement was .55 in a study by Pederson & Moran, 1995). Tarabulsy, Avgoustis, Phillips, Pederson & Moran (1997) found that mothers attribute more significance than observers to items on the AQS concerning infant fussiness. Results indicated that mothers may confound issues of attachment security and infant fussiness when completing the AQS. In addition, mothers' AQS scores do not consistently correspond to Strange Situation classifications (Belsky & Rovine, 1990; van Dam & van Ijzendoorn, 1988).

Using an observer as a rater

Concordance with Strange Situation classifications is usually better when observers are used as raters (Vaughn & Waters, 1990), and validity is improved due to observer training. However, even if an observer completes the AQS, by nature of its design, it is unable to distinguish between different types of insecure behaviour, as it only measures behaviour on a secure-insecure continuum in contrast to the tripartite classification scheme yielded by the Strange Situation. AQS scores do not therefore provide as much information about insecure behaviour as do Strange Situation classifications.

White (1998) has suggested that associations between attachment and concurrent correlates may depend upon the method used to assess attachment. White assessed attachment using both the Strange Situation and the AQS and found that different variables correlated with each method of attachment. Consequently it is important to determine whether the relationship between parenting stress and attachment can also be observed when attachment is measured using the Strange Situation.

1.33 Parenting stress and Strange Situation classifications

Many believe the Strange Situation to be the most valid assessment of attachment security. It has a standardised administration, it elicits theoretically relevant attachment behaviours, and it has training requirements that ensure reliability. Few studies have used the Strange Situation to test objectively the quality of the attachment relationship and compare it to scores on the PSI (Park, 1995; Scher & Mayseless, 2000; White, 1998). The first is a small-scale study published in Korean, and neither the details of the procedure nor the results are available in English. The second study involved 98 Israeli mother-infant dyads, but only one of these infants was classified as avoidant, so the analysis only concerned the secure and ambivalent groups. The authors found that mothers of ambivalent infants reported higher parenting stress at the time of the Strange Situation assessment than mothers of secure infants. The last study found no relationship between parenting stress and Strange Situation classifications.

An additional study employed a measure of attachment that is thought to be analogous to the Strange Situation. Moss *et al* (1998) used a measure that has been developed to assess

correlates of attachment with 3-7 year olds. They videotaped a separation and reunion procedure with mothers and their 5-7 year old children and coded the reunion behaviour according to criteria from the Cassidy & Marvin (1992) and the Main & Cassidy (1988) systems. Both systems use a five category coding system - secure, insecure avoidant, insecure ambivalent, insecure controlling and insecure other.

The authors found that mothers of insecure ambivalent pre-schoolers reported significantly higher levels of parental stress on the 'mother' domain of the PSI than the other groups. Mothers of secure children also had a slightly higher mean level of parental stress on the 'mother' domain than mothers of insecure avoidant children, though this difference was not significant. In other words the pattern of mean maternal parenting stress on the 'mother' domain by attachment classification was $C > B > A$. This was in accordance with the authors' prediction, and with a study by Stevenson-Hinde & Shouldice (1995). Stevenson-Hinde & Shouldice suggest that the ambivalent style is linked with an emotional expressive style in the mother that exaggerates negative affect expression. They also suggest that the idealising stance of many mothers who have children with an avoidant classification contributes to a masking of negative emotion and a positive bias in self-reports.

In summary, all but one of the studies that have found a relationship between parenting stress and attachment have used methods other than the Strange Situation to measure attachment. In addition, all of the studies measured attachment and parenting stress concurrently - i.e. none of the studies were predictive. To date, the only study that has

found a relationship between Strange Situation classifications and scores on the Parenting Stress Index was conducted using Israeli participants, and did not include infants with avoidant attachment classifications in the analysis. It is thus not clear whether the reported relationship between parenting stress and attachment security can also be seen when parenting stress is measured before attachment, and when the tripartite classification system used in the Strange Situation is employed.

1.34 Overall level of parenting stress - does it matter?

An additional consideration with this area of research is whether or not the nature of the relationship between attachment security and parenting stress varies with the amount of parenting stress experienced. Two possible hypotheses have been presented by Deater-Deckard (1998):

1. "Parenting stress, and the process linking the stress reaction to parenting behaviour and child adjustment, is similar across the full range of the parenting stress continuum.
2. The level of parenting stress may moderate the relations between parenting stress and parenting behaviour, child behaviour, and family functioning, such that the links between parenting stress and child adjustment are different for those parents in the normal range compared to those with more extreme levels of stress" (p324-325).

The majority of the studies previously mentioned that looked at attachment security and parenting stress used randomly selected participants from the general population (Jarvis & Creasey, 1991; Moss *et al*, 1998; Scher & Mayseless, 2000; Teti *et al*, 1991; White,

1998). Nakagawa *et al* (1992) specifically looked at Japanese sojourners in the US. Hadadian & Merbler (1996) targeted high-risk families - in their sample only 30% of the participants showed an overall stress level similar to the typical stress level among the normative sample reported by Abidin (1986). The remaining 70% reported abnormally high levels of parenting stress.

As many of these studies demonstrated a relationship between parenting stress and attachment, this evidence would seem to support the first hypothesis. However, few of the studies on normative populations reported exactly how stressed their mothers were, and so we cannot be sure that stress levels in these populations were normally distributed and typical of the population as a whole. In addition, many studies were small scale - although Scher & Mayseless (2000) managed to recruit 98 mothers and Moss *et al* (1998) sampled 121 mother-child dyads, sample sizes in the remainder of the studies ranged from 32 to 50 participants. Consequently further research is needed on large samples of mothers with normal levels of parenting stress (particularly including those with low levels of stress) before we can say which of the hypotheses is the most likely possibility.

1.4 Family functioning

The previous section demonstrated that there may be a relationship between parenting stress and attachment. There is also a growing body of evidence that indicates that the relationship between parenting stress and attachment may be mediated by how well the family unit is functioning as a whole. It may be that high levels of parenting stress do not

affect parenting behaviour if the mother feels supported by her family, and can use them to buffer the effects of this stress, as opposed to letting it affect the relationship between her and her baby. This section outlines what is meant by family functioning and reviews research into its relationship with both parenting stress and attachment.

1.41 Family functioning - what it is and how it is measured

Unfortunately there seems to be no clear definition of what is meant by family functioning. In this study the term is used to refer to the everyday functioning of the family unit, particularly focusing on the relationship between the mother and her partner. A myriad of different measures have been used by different researchers to look at this domain. They include the Dyadic Adjustment Scale (Spanier, 1976), the ENRICH Marital Inventory (Olson, Fournier & Druckman, 1982), the Family Environment Scale (Moos & Moos, 1981), the Marital Harmony scale (Locke & Wallace, 1959), and measures of social support such as the Maternal Social Support Index (Pascoe, Loda, Jeffries & Earp, 1981) and the Questionnaire on Social Support (Crnic, Greenberg, Robinson, Ragozin & Basham, 1983).

The measure of family functioning that will be employed in this study is the Family Assessment Device or FAD (Epstein, Baldwin & Bishop, 1983). This is a questionnaire that has seven subscales, but the authors have shown that the general functioning scale on its own correlates very highly with the entire measure. This scale asks about relationships within the family, conflict, discord and perceived support from family members.

1.42 Family functioning and parenting stress

As mentioned previously, family functioning may mediate the relationship between parenting stress and attachment. It may do so by directly affecting levels of parenting stress (Figure 2), or indirectly by mediating the relationship between parenting stress and parenting behaviour (Figure 3).

Figure 2:

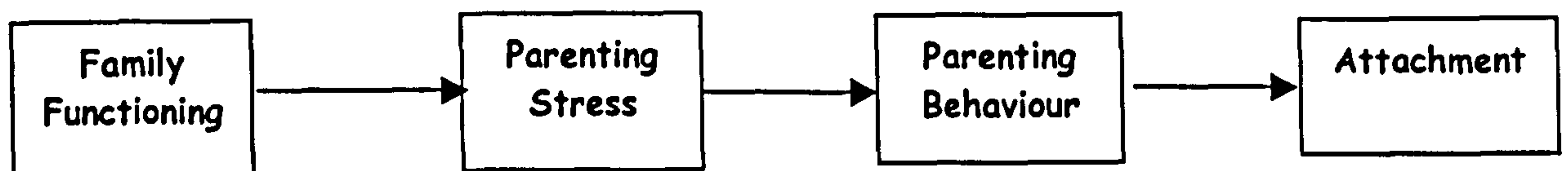
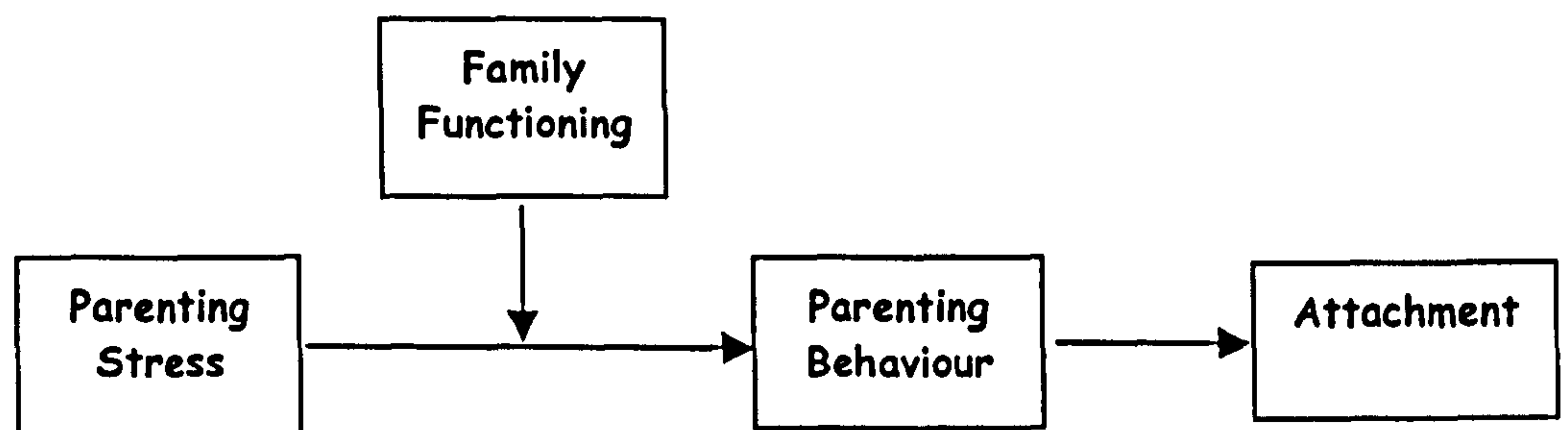


Figure 3:



Evidence that family functioning and parenting stress co-vary comes from studies looking at these two variables in conjunction. Lavee, Sharlin & Katz (1996) looked at the relationship between parenting stress and marital quality. They measured parenting stress using a 9 item scale developed by Pearlin & Schooler (1978), (*not* the PSI), and marital quality using the ENRICH marital inventory in 287 Israeli married couples with children living at home. They found that for both spouses, perceived marital quality was negatively associated with parenting stress. The authors suggested that this implies that children affect their parent's marriages via the degree of stress their parents experience in

the parenting role. However the authors also acknowledge that as this is a cross-sectional study, the direction of causation could be the other way around - a poor marital relationship may *cause* parents to experience difficulties in their parenting role.

Further evidence that parenting stress is associated with poor family functioning comes from a study by Quittner, Glueckauf & Jackson (1990). They found that chronic parenting stress (measured using the PSI) was associated with lowered perceptions of emotional support in mothers of hearing impaired pre-school children and controls. Lastly Adamakos, Ryan, Ullman & Pascoe (1986) found that maternal social support (as measured by the Maternal Social Support Index) correlated negatively with level of parenting stress (as measured by the PSI).

Unfortunately, as all of these studies are correlational and did not investigate attachment, they do not help us shed light on the mechanism by which family functioning may affect parenting stress and attachment.

1.43 Family functioning and attachment

It has been suggested that the functioning of the family unit may mediate the relationship between parenting stress and attachment. In a study by Durrett, Otaki, & Richards (1984), mothers of securely attached infants perceived greater support from their husbands than did mothers of insecurely attached infants. (Attachment was measured using the Strange Situation.) They speculated that mothers who do not perceive support from their husbands may experience a higher level of stress than those who do perceive such

support, and thus may be less psychologically available to their infants, making them less able to promote secure attachment relationships.

In support of this idea, Speltz *et al* (1997) found that family characteristics (dyadic adjustment, social support and a measure of family cohesiveness, expressiveness and conflict) measured at three months could predict security of attachment at 12 months in their control group of normal infants. In addition, Teti *et al* (1991) found that mothers' marital harmony predicted security in firstborn infants, and Goldberg & Easterbrooks (1984) found that secure toddlers were most likely to be members of families in which husbands and wives were satisfied with the marriage. Crockenberg (1981) found that social support at three months was a good predictor of secure attachment at one year. She argues that mothers with social support are less harried and feel less overwhelmed, and as a consequence are more available to their babies. Lastly, Belsky, Rovine & Fish (1989) found that marital decline across the transition to parenthood was most pronounced in the case of wives whose infants developed insecure attachments to them.

Belsky's view (cited in Gable, Belsky & Crnic, 1992) is that the instrumental and emotional support that spouses provide for each other may be associated with enhanced performance in the parenting role. Indeed, Isabella (1994) found that prenatal marital satisfaction and social support predicted role satisfaction at four months, which in turn predicted actual parenting behaviour (sensitive interactions) at 9 months. These sensitive interactions then contributed to the development of secure attachments by one year.

In summary, there are indications in the literature that family functioning may indeed mediate attachment formation.

1.5 Linking all three variables together

Only one study has looked at all three variables (parenting stress, family functioning and attachment) together. In the study mentioned previously by Nakagawa *et al* (1992), the authors measured parenting stress using the PSI, family functioning using the Marital Harmony Scale, the Dyadic Adjustment Scale and an adaptation of a social interaction questionnaire, and attachment using the Attachment Q-sort in a group of 53 Japanese mothers who were sojourners in the United States. They found that when *life* stress was high, mothers reported more parenting stress if support was not adequate, and less parenting stress if support was adequate. In contrast, when life stress was low, mothers with high or low levels of support did not report substantially different levels of parenting stress.

Surprisingly, *low* marital support was associated with *higher* levels of attachment security in this study. The authors explained this latter finding as a consequence of Japanese culture. Their hypothesis was that Japanese mothers are prone to seek emotional closeness to their children because they cannot obtain love and intimacy in their marriages. Japanese culture may promote compensatory relationships of this kind because of the high value placed on strong and interdependent mother-child ties.

1.6 Rationale for the present study

In summary, research has shown that attachment in infants is related to a number of different factors. Certain maternal, infant and family characteristics, such as maternal sensitivity and infant temperament, can predict infant attachment prospectively. The ability to predict which children may develop insecure attachments is of clinical value because insecure attachments have been associated with later psychopathology.

Insecure attachment as measured by the attachment Q sort is associated concurrently with high levels of parenting stress, and research indicates that it may also be associated with poor family functioning. Further research is needed to determine whether the relationship between high levels of parenting stress and insecure attachment can also be observed when using a more reputable measure of attachment known as the Strange Situation. Currently there are only three studies that have looked at the relationship between parenting stress and attachment classification according to the Strange Situation - one was published in Korean, one used Israeli participants and avoidant infants were discarded from the analysis, and one found no relationship between parenting stress and attachment as classified by the Strange Situation. Moreover, even though maternal characteristics have been shown to be important in predicting attachment, *no* studies have looked at whether maternal scores on either the long or short form of the PSI can *predict* attachment status later on. A longitudinal study design will enable us to test whether parenting stress at an early stage does indeed affect the later development of the mother-infant attachment relationship as measured by the Strange Situation.

In addition, although there are indications that family functioning may mediate attachment formation, only one study has looked at the relationship between family functioning, attachment, and parenting stress. This study looked at a very specific population (Japanese sojourners in the US) and thus the results may not be applicable to mother-infant dyads from other cultures. Studies have used a variety of measures of family functioning, and despite the fact that it possesses good reliability and validity, no studies were found that used the Family Assessment Device to measure family functioning in order to investigate the relationship with parenting stress and security of attachment.

The current study aims to extend research in this area by investigating the predictive relationship between parenting stress and attachment by measuring parenting stress at 10 months using the PSI-SF, and infant attachment at 17 months using the Strange Situation. In addition it will explore the relationship between family functioning and attachment using the general functioning scale of the Family Assessment Device. Lastly it will look at whether family functioning at 10 months mediates the predictive power of parenting stress on attachment. The research questions are as follows:

1. Does maternal parenting stress at 10 months predict attachment classification of infants according to the Strange Situation at 17 months?
2. Does family functioning at 10 months predict attachment classification of infants according to the Strange Situation at 17 months?

3. Does family functioning at 10 months mediate the relationship between maternal parenting stress and subsequent attachment?

1.7 Hypotheses

Based on the preceding rationale and research questions, the following hypotheses will be investigated:

Hypothesis 1:

Mother's high scores on the short form of the Parenting Stress Index at 10 months will be associated with insecure attachment classifications in their infants at 17 months.

Hypothesis 2:

Mother's high scores on the general functioning scale of the Family Assessment Device at 10 months will be associated with insecure attachment classifications in their infants at 17 months.

Hypothesis 3:

Family functioning at 10 months will mediate the predictive relationship of maternal parenting stress on attachment. (i.e. Maternal parenting stress will be positively related to attachment classification if it is also accompanied by poor family functioning).

Section 2

METHOD

Section 2: METHOD

2.1 Design

This was a prospective longitudinal study conducted on a general population sample of infants and their mothers.

2.2 Participants

Participants were mothers and their infants of 17 months (± 2 weeks) who were already part of a large scale prospective study known as the Families, Children and Child Care study (Sylva, Stein & Leach, 2000). These mothers had been recruited into the main study from the general population prior to the infant's birth. The Families, Children and Child Care study was designed to examine the effects of child care on children's development between birth and the first year at school, and is ongoing. Exclusion criteria for the main study were:

Mother - known to have a serious medical condition

- HIV positive
- a substance abuser
- not fluent in spoken English
- under 16 years of age.

Infant - born prior to 36 weeks gestation

- birth weight <2500grams
- required >48 hours in SCBU
- born with major congenital abnormalities
- one of twins or a multiple birth.

No additional exclusion criteria were applied for the purposes of the current study.

2.3 Measures

Data for this study were collected at three time points.

- 1) **Infant aged 3 months:** Basic demographic information was collected during an interview with the mother. This included gender, ethnicity and birth order of the infant; marital status, ethnicity, educational status and socio-economic classification of the parents; and family size and composition.
- 2) **Infant aged 10 months:** Mothers completed the short form of the Parenting Stress Index and the general functioning scale of the Family Assessment Device. (A researcher visited the mother at home and asked her to complete these questionnaires.)
- 3) **Infant aged 17 months:** Mothers and infants took part in the Strange Situation procedure to assess the security of the infant's attachment to the mother.

Details and psychometric properties of the measures used are given below.

2.31 Socio-economic classification

The system used to code socio-economic class was the Socio-Economic Classification (SEC) proposed by the Economic and Social Research Council and the Office for National Statistics (ONS, 1998). The full version of the SEC offers 14 classes but 9, 8, 5, or 3 class models can also be generated. A brief summary of this classification system is presented in Appendix 1.

2.32 Parenting Stress Index - Short Form (Abidin, 1995).

The 36 item short form of the Parenting Stress Index (PSI-SF) consists of three subscales: Difficult Child, Parent-Child Dysfunctional Interaction, and Parental Distress. It also contains a scale to identify Defensive Responding. It is a brief screening tool designed to identify parents under stress. It was developed using a sample of 800 mothers and their one-year-old infants to establish normative data. The short form was used in this study because it correlates sufficiently with the long form of the PSI (see below) and takes less time to administer.

The 36 items on the PSI-SF are all worded negatively (a copy of this questionnaire can be seen in Appendix 2). The respondent ticks whether they "strongly agree", "agree", "not sure", "disagree", or "strongly disagree" with each statement. Each item is scored 1-5. A high score on the PSI indicates increased stress/distress. Parents who obtain a total score at or above the 90th percentile (Total Score of 91+) are experiencing clinically significant levels of stress (Abidin, 1995). Scores of 10 or below for the Defensive Responding scale suggest either that the parent is trying to *portray the image* of being a competent parent,

or that they are not invested in the role of parent, or that they are in fact a highly competent parent.

Reliability and validity

Test-retest reliability was assessed over a 6 month retest interval by Abidin and found to be .84 for Total Stress, .85 for Parental Distress, .68 for Parent-Child Dysfunctional Interaction and .78 for Difficult Child. Alpha reliability coefficients were .91, .87, .80, and .85 respectively. Total Stress on the long form of the PSI correlated .94 with Total Stress on the short form, which suggests that the measure has good validity, as the validity of the long form is well established (Abidin, 1995).

2.33 Family Assessment Device - General Functioning scale. (Epstein, Baldwin & Bishop, 1983).

The full version of the Family Assessment Device (FAD) has seven scales: problem solving, communication, roles, affective responsiveness, affective involvement, behaviour control and general functioning. The authors of the FAD have demonstrated that the subscales correlate very highly with each other. Thus using a single scale provides almost as much information as all the scales used together, and is more efficient than administering the entire 53 items (Epstein *et al*, 1983).

The general functioning scale contains 12 items that give a measure of the overall health/pathology of the family. A copy of this scale can be seen in Appendix 3. Six of the items are worded to describe healthy functioning and the other six describe unhealthy

functioning. The respondent must tick whether they "strongly agree", "agree", "disagree", or "strongly disagree" with each of these statements. The categories are given values of 1 to 4 and the overall score is calculated by dividing the total score by 12. The higher the score, the poorer the family functioning. The cut off score for differentiating "pathological" from healthy families is 2.0 (Miller, Epstein, Bishop & Keitner, 1985).

Reliability and validity

The reliability of this scale was measured as .92 (Cronbach's alpha) by Epstein *et al* (1983). In addition, a study by Byles, Byrne, Boyle & Offord (1988) demonstrated good reliability and validity for the general functioning subscale with a sample of 1869 families. It correlated as predicted with six other family variables (parental deviance, alcohol abuse, emotional disorder, marital disharmony, parental separation and spouse abuse). Internal consistency was found to be .86 (Cronbach's alpha) and the split-half coefficient (Gutman) was .83. Test re-test reliability at an interval of one week was .71 for this scale (Miller, Epstein, Bishop & Keitner, 1985).

2.34 The Strange Situation (Ainsworth *et al*, 1978).

The Strange Situation is a well established, reliable and valid tool that is used to measure attachment behaviour in children of 12-18 months (Ainsworth *et al*, 1978). It consists of a standardised 25 minute procedure in which the child and his/her mother are introduced to a stranger, the mother leaves the room, the mother then returns and the stranger leaves, the mother leaves and the stranger returns, and finally the mother returns to the room. (An abbreviated version of the procedure is presented in Appendix 4.) This procedure

thus contains brief episodes of increasing stress for the infant, as it is separated from its mother on two occasions. On the basis of the behaviour the children exhibit on reunion with the mother on both occasions, they are classified as belonging to one of three categories of attachment - secure (B), anxious-avoidant (A) or anxious-ambivalent (C). A and C are insecure classifications.

As mentioned in the introduction, Main & Solomon (1986) proposed the use of a fourth category (D) known as disorganised attachment. This was not used in this study for a variety of reasons –

- the use of this category requires separate training.
- inter-rater reliability is difficult to establish.
- children classified as D are often double coded in research studies (i.e. also attributed an A/B/C classification) as the D classification is thought to be orthogonal to the A/B/C classification. Thus it is possible for children with a D classification to fall into any of the other groups.

The Strange Situation was administered according to standard procedures by two researchers (The author of this study and one other). The current researcher individually administered and rated 40 of the 104 Strange Situation procedures. Both researchers were trained to assess and rate attachment behaviours by an accredited rater. All of the Strange Situations were videotaped and coded by the researchers prior to any knowledge of the other variables. A summary of the behaviours rated in the Strange Situation for coding can be seen in Appendix 5.

Reliability and validity

Ainsworth *et al* reported that a satisfactory degree of inter-rater reliability can be achieved with training for the four types of behaviours rated in the Strange Situation. In their original study, the degree of agreement between the two independent scorers was .93 for proximity and contact-seeking behaviour, .97 for contact maintenance, .96 for resistance and .93 for avoidance. In terms of interjudge agreement in A/B/C classification, the authors reported that there was "virtually total interjudge agreement" (p63).

In terms of test-retest reliability, both Waters (1978) and Connell (1976) found a remarkable degree of stability of A/B/C classification between 12 and 18 months (96% and 81% respectively). The degree of stability is less if a short test-retest interval is used, as the infant's memory of it means that the situation is familiar and not 'strange' - consequently different behaviours are exhibited (Ainsworth *et al*, 1978).

To establish inter-rater reliability in this study 30 of the cases (28% of the sample) were additionally coded by the accredited rater who had provided training. The cases chosen for double coding included 10 that had been administered by the author. Inter-rater reliability was checked by determining whether the two raters agreed on which attachment classification the infant belonged to (A/B/C). Agreement for the three-category system was 90% between the current researcher and the accredited rater. Agreement was also satisfactory between the two researchers (85% agreement on 20 cases) and between the second researcher and the accredited rater (100% on the same 20

cases). One case had been miscoded by the current researcher - on reviewing the discrepant case it was discovered that the original coding given was evidently erroneous, as the level of resistant behaviour had not been properly taken into account. All of the remaining cases were checked to ensure this had not happened elsewhere.

The validity of the Strange Situation for use in western cultures is also well established. For example, Feldman & Ingham (1975) demonstrated that certain behaviours in the Strange Situation are likely to be indices of attachment as they are exhibited more frequently / more intensely towards attachment figures than toward non-attachment figures. They found that 1-year olds were more active, played more, cried less and sought proximity more when they were assessed with their parents compared to when they were assessed with an acquaintance. They concluded that "proximity seeking over the entire course of the observation is a valid indicator of attachment" (p328). However, there is some concern in the literature that the Strange Situation is of reduced validity in some cultures, such as Japan, where child rearing customs are very different (Gardner, Lamb, Thompson & Sagi, 1986; Nakagawa, Lamb & Miyaki, 1992; Takahashi, 1990).

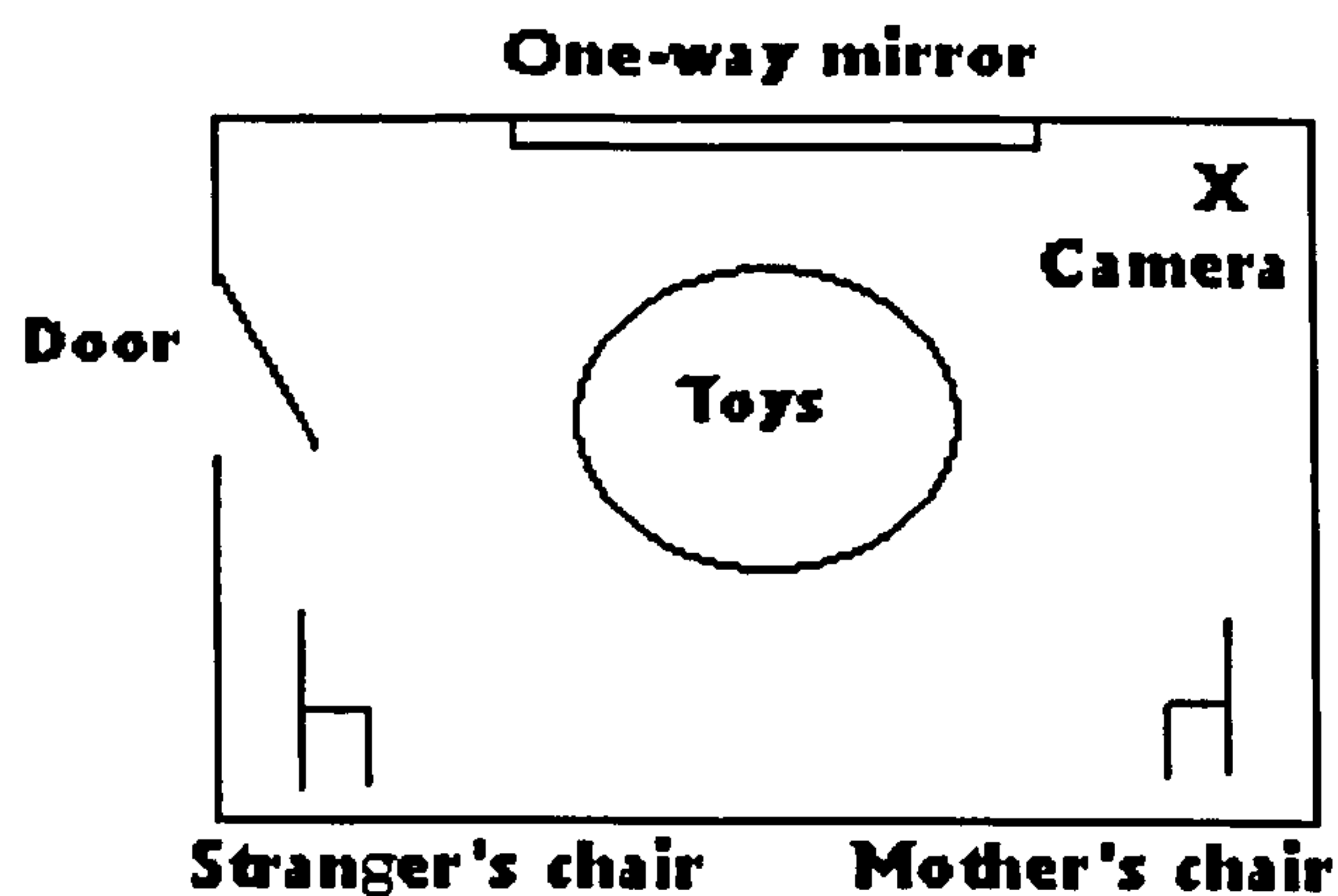
2.4 Procedure

Participants were selected from the larger sample (n=1200) who had already consented to take part in the main Families, Children and Child Care study. All mothers had been visited at home by researchers from the main study when their baby was 3 months and 10 months old; during these visits the questionnaire measures had been collected. For the

current study, all mothers whose infants were approaching the correct age and who lived within 30 miles of the attachment laboratory (n=170) were sent a letter from the research team (Appendix 6) describing the study and inviting them to participate in the Strange Situation procedure. The researcher telephoned the mothers approximately one week later. At this point they were given the opportunity to ask questions about the study and to discuss any concerns that they might have. It was explained in the letter that this was an additional part to the main study they had already agreed to participate in, and that they were free to withdraw from the study at any point. Those mothers who expressed an interest in taking part were offered a convenient appointment for the Strange Situation assessment at a time when the infant would be aged 17 months (+/-2 weeks). A letter was sent to the mother to confirm this appointment (Appendix 7), along with a map showing how to get to the playroom. The day before the appointment, the researcher reconfirmed the appointment by telephoning the mother.

The mother and baby came to a playroom set up in a room with a one-way mirror and a video camera (see Figure 4 below). A selection of age-appropriate toys was available for the babies to play with. To begin with the procedure was explained and time was allowed for discussion of the study. The mother then completed a consent form for this aspect of the study (Appendix 8). Mothers were given a prompt sheet to refer to, which they kept with them throughout the procedure (Appendix 9). The participant's travel expenses were reimbursed in cash.

Figure 4: Layout of the playroom for the Strange Situation procedure



The researcher then conducted the Strange Situation, as detailed by Ainsworth *et al* (1978). Four female psychology undergraduates employed by the Families, Children and Child Care study took it in turns to act as the stranger.

The procedure was video-recorded for scoring purposes and viewed only by the two researchers and the accredited rater (to check inter-rater reliability). All data were number coded and the names and addresses were kept in locked filing cabinets.

2.5 Ethical issues and ethical approval

The Strange Situation procedure is designed to elicit some distress in the infants. However, in the event of an infant becoming extremely distressed during either of the separations, the procedure allows for the early termination of the episode by asking the mother (or the stranger) to re-enter the room before three minutes have elapsed. Mothers were asked to let the researcher know if they felt their infant was unduly distressed so

that either the mother or the researcher could decide to end the separation early. Mothers were also informed that they could stop the procedure altogether at any time if they wanted to.

It was agreed by the researchers that if any ethical problems arose during the data collection, for example, in the unlikely event that a mother was seen to be physically abusing her child, the researcher would discuss the issue with the project co-ordinator who would report it to the relevant authorities as appropriate.

Full ethical approval had already been granted for the main study in 1997. A separate proposal was submitted for the current study; ethical approval was granted from the Oxfordshire Psychiatric Research Ethics Committee after the information letter to participants had been revised and expanded (Appendix 10).

Section 3

RESULTS

Section 3: RESULTS

3.1 Sample Size

Of the 170 eligible mothers that were invited to participate in the study, 104 agreed to take part. A few of the 170 mothers were unreachable by telephone ($n=7$). Those who refused the invitation to participate over the telephone did so for a variety of reasons including not being free to attend on any of the dates suggested, and/or not wanting to travel to the playroom.

The findings presented here concern 104 participants. Two of these participants had refused to complete the general functioning scale of the FAD at 10 months, but as they *had* completed the PSI-SF they were kept in the sample. Hence analysis concerning GF-FAD scores involves only 102 of the participants.

3.2 Characteristics of the Sample

3.21 Infant Characteristics

Age

All infants were aged 17 months \pm 2 weeks at the time of the Strange Situation assessment.

Sex

Of the 104 infants, 43 were male and 61 were female.

Ethnicity

Seven of the infants were classified by their mothers as mixed race. The rest were classified as white.

Birth Order

Forty two of the infants were the first born child of the mother, 40 were second born, 10 were third born, 3 were fourth born, one was fifth born and one was the sixth born child. Birth order data were unavailable for 7 of the participants.

3.22 Family Characteristics

Marital status

Most of the mothers (95%) reported that they were either married or cohabiting.

3.23 Maternal Characteristics

Educational status

The highest level of education gained by the mother ranged from vocational qualifications at the age of 16 years (n=3) to higher degrees (n=30). Fifty-five percent of the sample had degree level qualifications or above.

Socio-economic status

According to the three-class model of socio-economic status of maternal occupation (ONS, 1998), 56 mothers (54%) were in class I jobs (managerial and professional), 27 (26%) were in class II (intermediate) and 21 (20%) were in class III (working).

The socio-economic classification of the family as a whole was calculated by also taking the father's occupation into account, and classifying the family according to the higher of the two occupations. When reclassified in this manner, 80 families (77%) were in class I (managerial and professional), 14 (13%) were in class II (intermediate) and 10 (10%) were in class III (working).

Ethnicity

All mothers classified themselves as White, except one mother who was Mixed Race and one mother who was Indian.

3.3 Infant attachment

On the basis of the Strange Situation, the infants were categorised into three attachment groups. The distribution (21% anxious-avoidant, 68% secure and 11% anxious-ambivalent) was consistent with previous studies on normal populations (e.g. Ainsworth *et al*, 1978; Benn, 1986; Pastor, 1981).

3.4 Investigation of hypotheses

3.41 Data analysis

Data were analysed using the SPSS for Windows package. When investigating hypotheses, the data were examined at each stage to see whether they met the assumptions for parametric tests (i.e. normal distributions and equal variance in each

group). If this was not the case, non-parametric tests were employed. In addition, as the majority of previous research had not used identical measures to the current study, it was impossible to be completely certain in what direction any differences might lie, despite the fact that the hypotheses were posed in a directional manner. Consequently a conservative approach was taken with the data analysis, and two-tailed tests were used to decrease the possibility of a type I error.

Distribution of PSI scores

It was disappointing to find that, in this study, the PSI-SF scores were lower than expected for a normal population, i.e. on average, the mothers in the sample had unusually low levels of parenting stress. A significant proportion of mothers reported no stress at all on some of the subscales (e.g. 32% of mothers achieved the minimum score on the Parent-Child Dysfunctional Interaction subscale). The median scores for the entire sample were 63.5 for Total PSI-SF score, 26 for Parental Distress, 14 for Parent-Child Dysfunctional Interaction and 22 for Difficult Child, whereas the median scores for the normative sample reported by Abidin (1995) on the PSI-SF are 69, 25, 19 and 25 respectively. In this study only 34 mothers (33% of the sample) reported total levels of parenting stress greater than 69.

Consequently it was decided to conduct the analysis in two ways. Initially, all the data were analysed to look for differences between groups. Secondary analysis was then conducted on the cases where the mother reported moderate to high levels of parenting stress. Abidin states that parents who obtain scores at or above the 90th percentile on the

PSI-SF (Total Stress score of 91+) are experiencing clinically significant levels of stress. It was initially hoped that this cut-off point could be used to look selectively at those mothers who were experiencing high levels of parenting stress in order to investigate whether, as proposed by Deater-Deckard (1998), the links between parenting stress and child adjustment are different for those parents in the normal range compared to those with more extreme levels of stress. However in this sample only five mothers obtained scores at or above this cut-off. This greatly restricted the analysis that could be done. Consequently a subgroup was created using the median amount of total parenting stress found in the *original normative sample* used to validate the PSI-SF as the cut-off point (Abidin, 1995). All cases with low parenting stress levels (equal to or below the 50th percentile score of 69 on the PSI-SF) were discarded from the analysis. Secondary analysis of the data was then performed on the remaining 34 mothers.

3.42 Characteristics of the high PSI-SF subgroup

Parenting stress

The mean level of maternal parenting stress in the subgroup was 80.8. The scores ranged from 70 to 122, and the standard deviation was 10.7.

Attachment

Of the 34 infants, 6 (18%) were classified as avoidant, 25 (73%) were classified as secure and 3 (9%) were classified as ambivalent. This distribution was broadly consistent with the distribution of the infants into the three attachment groups for the whole sample.

3.43 Hypothesis 1

Mother’s high scores on the short form of the parenting stress index at 10 months will be associated with insecure attachment classifications in their infants at 17 months.

To begin with, this hypothesis was investigated by comparing the mean scores on the PSI-SF and its subscales across attachment groups using independent t-tests, one-way ANOVAS and non-parametric tests where appropriate. The mean scores for the entire sample can be seen in Table 1 below:

TABLE 1: Mean scores on the Parenting Stress Index-Short Form (PSI-SF) by attachment classification

Attachment classification	Number in each group (n)	PSI-SF Total score	Parental distress subscale	Parent-child dysfunctional interaction subscale	Difficult child subscale
Secure (B)	71	64.1	26.5	15.6	22.0
Insecure (A+C)	33	63.8	25.6	16.3	21.9
Avoidant (A)	22	60.7	24.5	15.1	21.0
Secure (B)	71	64.1	26.5	15.6	22.0
Ambivalent (C)	11	70.2	27.7	18.6	23.8

Independent t-tests were used to look for differences between the secure and the insecure attachment groups in terms of Total PSI-SF score and two of its subscales. A non-parametric test (the Mann Whitney test) was used to look for differences between the secure and the insecure attachment groups on the Parent-Child Dysfunctional Interaction subscale as the data were not normally distributed for this variable. No significant differences were found on any of these tests (see Table 2 for results of this analysis).

TABLE 2: Results of comparison of mean scores between insecure and secure attachment groups

	PSI-SF Total score	Parental distress subscale	Difficult child subscale		Parent-child dysfunctional interaction subscale
t value	-.07	-.60	-.03	Mann-Whitney U	1170
d.f.	102	102	102	Z value	-.01
p value	.94 (n.s.)	.55 (n.s.)	.98 (n.s.)	p value	.99 (n.s.)

n.s.=not significant

From looking at the mean scores there was an indication that combining the two insecure attachment classifications could be obscuring any differences, as in general the means for the A and C classifications fell at opposite ends of the continuum. Consequently the data were re-analysed using ANOVAs (and the Kruskal-Wallis test for the Parent-Child Dysfunctional Interaction subscale) to look for differences in mothers' scores between the three attachment categories. However differences between these groups with the entire sample still did not reach significance (see Table 3 below for results of this analysis). Therefore no evidence was found to support Hypothesis 1.

TABLE 3: Results of comparison of mean scores between the three attachment classifications

	PSI-SF Total score	Parental distress subscale	Difficult child subscale		Parent-child dysfunctional interaction subscale
F value	1.46	.84	.92	Chi-Square	.11
d.f.	103	103	103	d.f.	2
p value	.24 (n.s.)	.43 (n.s.)	.40 (n.s.)	p value	.95 (n.s.)

n.s.=not significant

Secondly the analyses were repeated having excluded those cases with scores below or equal to the median on Total PSI-SF score (i.e. ≤ 69). The results of this analysis are shown in Table 3 below. All variables met the assumptions for parametric tests and so were analysed using ANOVAs.

TABLE 4: Results of comparison of mean scores between the three attachment classifications for the high PSI-SF subgroup

	PSI-SF Total score	Parental distress subscale	Parent-child dysfunctional interaction subscale	Difficult child subscale
F value	10.26	2.31	9.51	2.92
d.f.	33	33	33	33
p value	<.0005**	.12 (n.s.)	.001**	.07 (n.s.)

n.s.=not significant

*=significant at the 0.05 level

**=significant at the 0.01 level

The analysis revealed two significant differences between mean scores for the three attachment classifications. On Total PSI-SF score the difference between groups was significant at the 1% level. Post-hoc analyses revealed that the mean score for the ambivalent group (101.7) was significantly higher ($p=0.05$) than for both of the other two groups (75.7 for the avoidant group and 79.6 for the secure group) (see figure 5). On the Parent-Child Dysfunctional Interaction subscale the difference between groups was also significant at the 1% level. Post-hoc analyses revealed that the mean score for the ambivalent group (31.0) was significantly higher ($p=0.05$) than for both of the other two groups (20.2 for the avoidant group and 18.9 for the secure group) (see figure 6). Differences on the other two subscales did not reach significance.

Figure 5: Mean Total PSI-SF scores for cases above the median

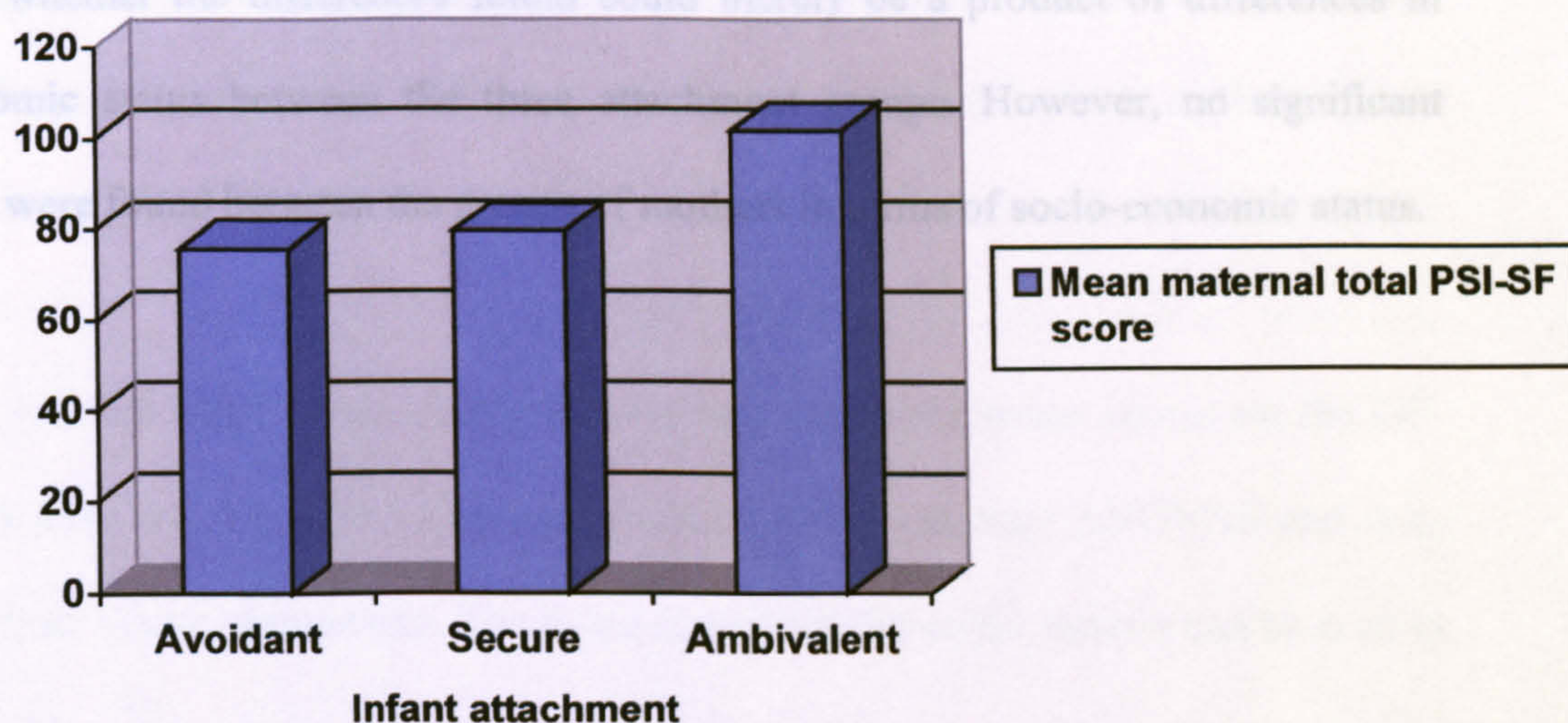
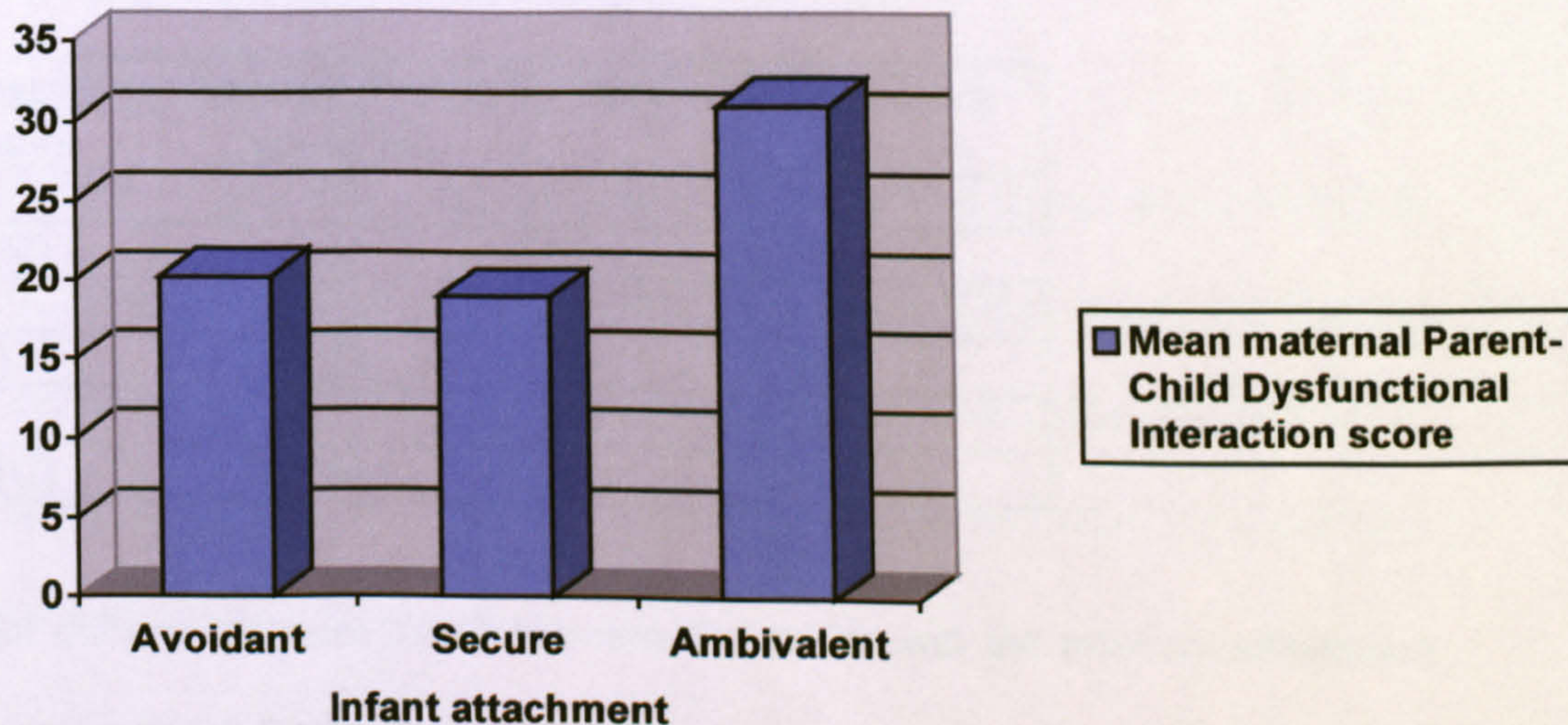


Figure 6: Mean Parent-Child Dysfunctional Interaction scores for cases above the median



As previous studies have found a relationship between scores on the PSI-SF and measures of socio-economic status (e.g. Paradise, Feldman, Colborn, Campbell,

Dollaghan, Rockette, Janosky, Kurs-Lasky, Bernard & Smith, 1999) it was important to investigate whether the differences found could merely be a product of differences in socio-economic status between the three attachment groups. However, no significant differences were found between the groups of mothers in terms of socio-economic status.

3.44 Hypothesis 2.

Mother’s high scores on the general functioning scale of the Family Assessment Device at 10 months will be associated with insecure attachment classifications in their infants at 17 months.

As before, this hypothesis was investigated by comparing the mean scores on the GF-FAD across attachment groups using independent t-tests, one-way ANOVAS and non-parametric tests where appropriate. The mean scores for the entire sample can be seen in Table 2 below:

TABLE 5: Mean scores on the General Functioning scale of the Family Assessment Device (GF-FAD) by attachment classification

Attachment classification	Number in each group (n)	Mean GF-FAD score
Secure (B)	71	1.74
Insecure (A+C)	33	1.70
Avoidant (A)	22	1.63
Secure (B)	71	1.74
Ambivalent (C)	11	1.84

No significant differences were found between the secure and the insecure attachment groups in terms of GF-FAD score ($t=-.45$, $d.f.=100$, $p=.65$). Again there was an indication that combining the two insecure attachment classifications could be obscuring any differences, as the means for the A and C classifications fell at opposite ends of the continuum. The data were analysed using the three-category system, but differences

between these groups with the entire sample did not reach significance ($F=.91$, $d.f.=101$, $p=.41$). Therefore no evidence was found to support Hypothesis 2.

As additional analysis had been conducted on those cases with above the median levels of parenting stress, it was felt useful to also selectively consider those mothers who were reporting poor family functioning. On this occasion it was possible to use the clinical cut-off point for pathological families to form a subgroup to selectively look at those mothers who were reporting poor family functioning. The clinical cut-off point falls at 2.0 (Miller, Epstein, Bishop & Keitner, 1985) - cases with scores at or above this value are considered as clinically significant. In this sample 34 cases fell at or above this point, and thus were included in the subgroup.

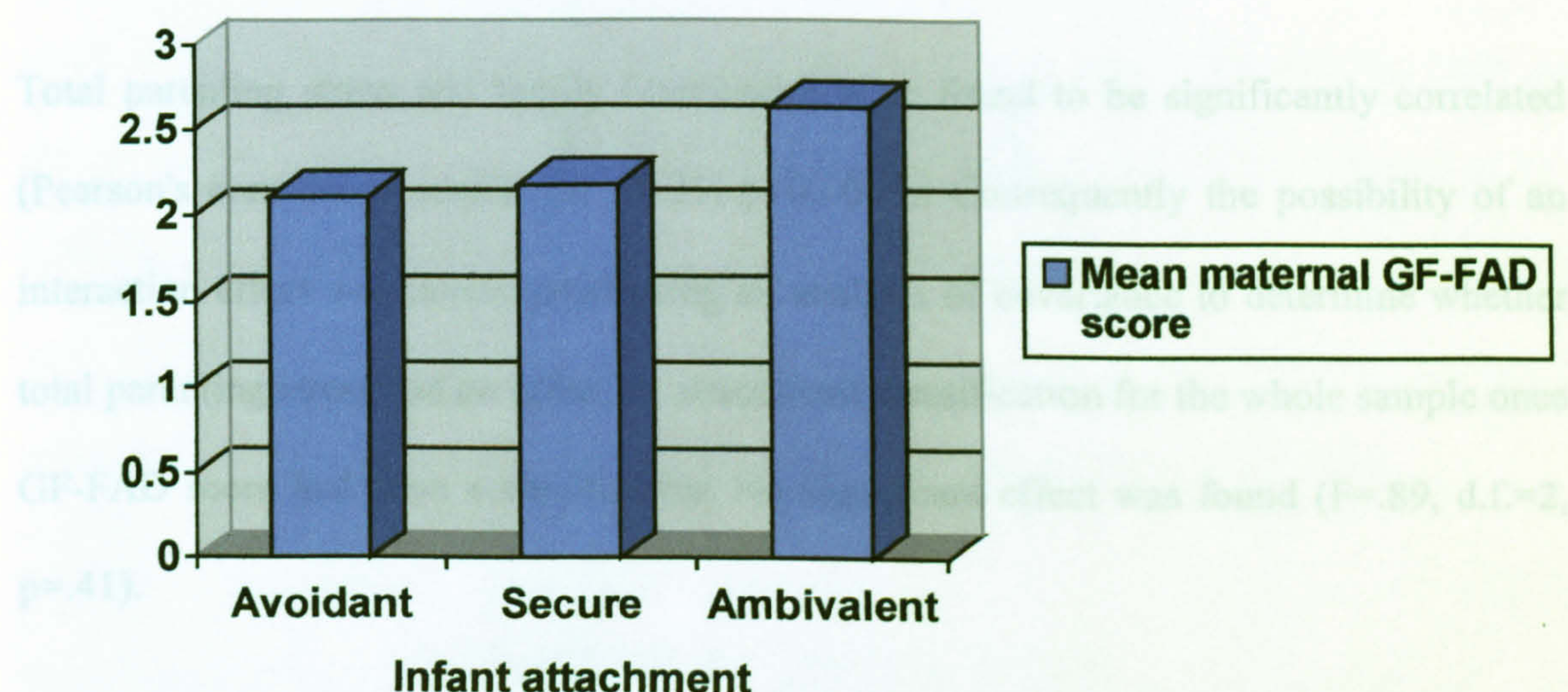
Characteristics of the subgroup with poor family functioning

The mean GF-FAD score in this subgroup was 2.22. The scores ranged from 2.0 to 3.3, and the standard deviation was 0.31. Of the 34 infants, 6 (18%) were classified as avoidant, 24 (71%) were classified as secure and 4 (12%) were classified as ambivalent. This distribution was broadly consistent with the distribution of the infants into the three attachment groups for the whole sample.

The analysis of the subgroup revealed a significant difference between groups. The difference between mean scores for the three attachment classifications on the GF-FAD was significant at the 1% level ($F=5.26$, $d.f.=33$, $p=0.01$). Post-hoc analyses revealed that the mean score for the ambivalent group (2.64) was again significantly higher ($p=0.05$)

than for both of the other two groups (2.11 for the avoidant group and 2.18 for the secure group) (see Figure 7).

Figure 7: Mean scores on the GF-FAD for cases at or above the clinical cut-off point



In addition, discriminant function analysis was performed to see if an equation could be elicited from a combination of parenting stress and family functioning scores that could predict attachment group membership. However, the equation thus derived was not able to correctly classify cases. It predicted that all cases would be classified as secure. This was because all three groups were very close to each other, as can be seen from the t-test results in Appendix 12.

Consequently it did not appear that family functioning was mediating the relationship between parenting stress and attachment. In no evidence was found to support Hypothesis 3.

3.45 Hypothesis 3.

Family functioning at 10 months will mediate the predictive relationship of maternal parenting stress on attachment. (i.e. Maternal parenting stress will be positively related to attachment classification if it is also accompanied by poor family functioning).

Total parenting stress and family functioning were found to be significantly correlated (Pearson's correlation coefficient =0.39, $p < 0.0005$). Consequently the possibility of an interaction effect was investigated using an analysis of covariance to determine whether total parenting stress had an effect on attachment classification for the whole sample once GF-FAD score had been controlled for. No significant effect was found ($F = .89$, $d.f. = 2$, $p = .41$).

In addition, discriminant function analysis was performed to see if an equation could be elicited from a combination of total parenting stress and family functioning scores that could predict attachment group membership. However, the equation thus derived was not able to correctly classify cases. It predicted that *all* cases would be classified as secure. This was because all three group centroids lay very close to each other, as can be seen from the territorial map in Appendix 11.

Consequently it did not appear that family functioning was mediating the relationship between parenting stress and attachment i.e. no evidence was found to support Hypothesis 3.

Section 4

DISCUSSION

Section 4: DISCUSSION

This prospective study was concerned with how mothers might influence the nature of the bond that their children form with them. Previous research has indicated that various characteristics of the mother and the family may influence the nature of this bond. This study looked at two particular characteristics. It aimed to determine whether maternal parenting stress and levels of family functioning measured in the child's first year of life were reliable precursors of the nature of infant attachment measured in the child's second year of life. It was designed as a predictive study - maternal and family factors were measured 7 months prior to the time when infant attachment data was collected.

4.1 Summary of research findings

4.11 Characteristics of the sample

The mother-infant pairs who chose to take part in this study were predominantly white and middle class. More female infants participated than male infants. Most (around 80%) of the infants were the mother's first or second born child. The mothers in this sample tended to be very well educated, with over half having at least degree level qualifications. The majority of the mothers were either married or cohabiting.

4.12 Infant attachment

Twenty-one percent of the infants were classified as anxious-avoidant, 68% as secure and 11% as anxious-ambivalent.

4.13 Parenting stress

Total parenting stress levels were, on average, lower than expected for a general population sample.

4.14 Investigation of the hypotheses

No evidence was found to support any of the three hypotheses when considering the entire sample. Insecure infant attachment was not associated with poor family functioning or high levels of parenting stress. In addition there was no difference in mean scores on either the PSI-SF or the GF-FAD between the three separate attachment classifications.

4.15 Secondary analysis of the data

When those mothers who were experiencing low levels of parenting stress were excluded from the sample, some differences did emerge. Infants classified as anxious-ambivalent had mothers with significantly higher total levels of parenting stress than all other mothers. This difference was also observed on the Parent-Child Dysfunctional Interaction subscale of the PSI-SF. Consequently there was evidence that *high* scores on the parenting stress index at 10 months were associated with *anxious-ambivalent* attachment classifications in infants at 17 months for a subgroup of participants reporting above the median level of parenting stress.

In addition, differences were also found in scores on the general functioning scale of the Family Assessment Device when looking at those cases that scored at or above the clinical cut-off point. Mothers of ambivalent infants had significantly higher scores on

the GF-FAD than all other mothers in this subgroup i.e. *poor* family functioning at 10 months was associated with *anxious-ambivalent* attachment classifications at 17 months.

4.2 Methodological considerations

4.21 Sample size

The inclusion of mother-infant dyads who took part in a Strange Situation administered by a second researcher meant that a reasonable sample size was obtained, given the time constraints of the study. It also meant that there were sufficient numbers in all three attachment classifications to enable them to be analysed as three separate groups, rather than having to combine the two insecure classifications into one, which tended to obscure any differences. Nonetheless there were still only 11 infants in the smallest group (anxious-ambivalent) - a greater sample size would have enabled more reliable and valid conclusions to be drawn. This is particularly true for the analysis done on the two subgroups, as only three of the infants in the high parenting stress subgroup and four in the poor family functioning subgroup were classified as ambivalent. Therefore it is quite possible that their mothers are not representative of the mothers of ambivalent infants in general.

4.22 Characteristics of the sample

Perhaps the main problem with this research is that the sample was self-selecting in two ways. The mothers agreed to be part of the Families, Children and Child Care Project in the first place, and then they further agreed to attend the playroom to take part in the

Strange Situation procedure. Despite the fact that the Families, Children and Child Care Project has recruited mothers from all social class backgrounds, the participants that opted in to this part of the study were predominantly middle class. Whilst collecting the data it was obvious that the majority of participants were car owners, and indeed some of the mothers who refused to take part in the study did so because they did not own cars and felt it would be too time consuming to get to the playroom using public transport. Although every attempt was made to include families from a variety of backgrounds, almost all mothers were white, and the majority were living with their partners. Therefore the sample may not be representative; either of the participants of the Families, Children and Child Care Project, or of the population as a whole.

In addition, in this study there was a 61% participation rate. Although this was a good rate of uptake, we cannot tell whether the nature of the attachment relationships would be different in those families who declined to participate, or whether their levels of parenting stress and family functioning would be significantly different from the research sample.

4.23 Measures

Although the measures used were chosen because they have been demonstrated to be both reliable and valid, they have some limitations. Both the PSI-SF and the GF-FAD are self-report measures. It has been suggested that mothers' scores may in fact reflect their ability to report negative aspects of their family situation rather than providing an accurate reflection of levels of parenting stress or family functioning. Stevenson-Hinde & Shouldice (1995) hypothesise that mothers' style of responding may be related to their

own attachment status, as can be measured using the Adult Attachment Interview. Previous research has found that parental attachment styles (dismissing, autonomous and preoccupied) often relate to their children's patterns of attachment (avoidant, secure and ambivalent respectively) (e.g. Fonagy, Steele & Steele, 1991). If mothers of avoidant children have defensive processes operating, as would be expected if they have a dismissing attachment style, then their self-reports may be misleadingly positive. If mothers of secure children are able to report negative as well as positive aspects, as would be expected if they have an autonomous attachment style, then they may not appear particularly positive on self-reports. On the other hand, if mothers of ambivalent children are preoccupied with their own feelings, as expected with a preoccupied attachment style, then they may emphasise any negative aspects. One possibility is that they over-report negative feelings as a way of gaining attention.

A similar problem arises specifically from the use of the PSI-SF. As yet, it is not clear whether this version of the PSI has discriminant and convergent validity (Deater-Deckard, 1998). It could be that, once again, scores are influenced by aspects of adult personality. For example, as illustrated by Deater-Deckard (1998), depressive symptoms and parenting stress covary. It could be that this covariance is due to shared methodology (i.e. both variables are measured using self-report questionnaires, which are subject to the influences outlined above). Alternatively the PSI-SF could be merely a proxy measure of depressive symptoms or neurotic personality characteristics. Until more studies have been done to establish the convergent and discriminative validity of this measure, we cannot be entirely confident about the role of parenting stress in child adjustment.

The use of the Strange Situation to measure attachment could explain the failure to confirm the hypotheses. As White (1998) found, associations between attachment and concurrent correlates may depend upon the method used to assess attachment. The failure to find a relationship between attachment and parenting stress in the current study is in accordance with White's findings (though it is in contrast to those of Scher & Mayseless (2000), who only investigated secure and ambivalent infants). It could be that the AQS and the Strange Situation are essentially measuring different constructs. As previously stated, AQS scores and Strange Situation classifications do not always converge (Belsky & Rovine, 1990; van Dam & van Ijzendoorn, 1988). Indeed, all but one of the studies that have found a relationship between parenting stress and attachment have used methods other than the Strange Situation (predominantly the AQS) to measure attachment. One possibility is that the AQS actually taps into how stressful the mother finds parenting, and is more a reflection of this than of the child's attachment. As mentioned in the introduction, mothers may confound issues of attachment security and infant fussiness when completing the AQS (Tarabulsky *et al*, 1997). This could explain why parenting stress index scores have been found to co-vary with AQS scores. Parenting stress may not in fact co-vary with Strange Situation attachment classification. However, the *presence* of a relationship between parenting stress and infant attachment in the high parenting stress subgroup would imply that this is unlikely to be the sole reason for the failure to confirm the hypotheses when the total sample was investigated.

4.3 Interpretation of research findings

This study failed to demonstrate a predictive relationship between parenting stress and family functioning at 10 months, and infant attachment at 17 months. However, it did find evidence of a relationship between these variables when looking selectively at those mothers who find parenting particularly stressful. In this section explanations for these findings are considered.

4.31 Explanation for low overall levels of parenting stress

As mentioned previously, some research has indicated that parenting stress is associated with social class, with lower classes experiencing higher levels of parenting stress (Paradise *et al*, 1999; Krueger, 1998; Rodrigue, Hoffman, MacNaughton, Graham-Pole, Andres, Novak & Fennell, 1996). This relationship was not found in this study, presumably due to the comparative homogeneity of the sample with respect to social class. However, the relatively high social class of the sample could explain why the levels of parenting stress were, on average, lower than expected for a normal population. Many of the mothers who participated in this study were relatively affluent and well-educated - the presence of these resources may take some of the stress out of parenting.

4.32 Explanation for the failure to confirm the hypotheses with the whole sample - predictive versus concurrent relationships

The original hypotheses were drawn from research that was *all* concurrent in nature i.e. parenting stress and attachment were measured at the same moment in time. It may be

that the failure to confirm the hypotheses in this study reflects a difference between predictive and concurrent relationships between variables. In other words, the level of maternal parenting stress may only vary with attachment *once the attachment is fully formed*, possibly because the infant's attachment style is itself the cause of the parenting stress. If parenting stress is measured before the attachment is fully formed (i.e. at 10 months) there may be no relationship between the two. This study may in fact provide evidence that parenting stress cannot be used to *predict* attachment status at a later date. However, the presence of a predictive relationship in a subgroup of the sample implies that this explanation of the findings is unlikely.

4.33 Tentative support for Deater-Deckard's hypothesis

The findings of this study provide some support for the idea that different processes operate in mothers with high and low levels of parenting stress, as proposed by Deater-Deckard's (1998) second hypothesis. When mothers with low levels of parenting stress were included in the analysis, no predictive relationship between parenting stress and attachment was demonstrated. Yet when only the mothers with moderate to high levels of parenting stress were included in the analysis, there was evidence that parenting stress *did* predict later attachment classification. It therefore appears that there is a threshold level of parenting stress - below this level (which in this study was a total score of 69) attachment is unaffected by levels of parenting stress, but above it attachment does covary with parenting stress.

4.34 Partial support for research hypotheses

Although the research hypotheses were not supported when the data as a whole was analysed, there was partial support for hypotheses 1 and 2 when only the high scoring cases were considered. In the high parenting stress subgroup, mother's high scores on the PSI-SF at 10 months did predict a particular insecure form of infant attachment at 17 months (anxious-ambivalent). In the poor family functioning subgroup, mother's high scores on the GF-FAD at 10 months also predicted the same type of insecure attachment classification at 17 months. Possible explanations for these supplementary findings are presented below.

4.35 Why do high levels of parenting stress predict ambivalent infant attachment in the high parenting stress subgroup?

The finding that particularly high levels of parenting stress predicted an ambivalent attachment style in the subgroup partially supported hypothesis 1. Thus there is some evidence that high levels of parenting stress (above a total score of 69) influence the nature of the mother-infant attachment. Unfortunately, however, the mechanism involved in this effect cannot be determined by the present study. Although a predictive relationship was observed, as mentioned in the introduction, this does not necessarily imply causation. The following interpretations of the subgroup findings bear this in mind.

Parenting stress leads to ambivalent infant attachment

It may be that, as Abidin (1995) proposed, high levels of parenting stress affect parenting behaviour, leading to increases in negative, authoritarian parenting. This parenting style

may then contribute to the formation of an ambivalent attachment as the child is uncertain whether it will be disciplined or have its needs met if it is distressed.

In accordance with this suggestion, the current study found differences between the mothers of ambivalent infants and all other mothers in scores on the Parent-Child Dysfunctional Interaction subscale of the PSI-SF. According to Abidin (1995) the Parent-Child Dysfunctional Interaction subscale focuses on the mother's perception that her child does not meet her expectations, and that interactions with the child are not reinforcing to her as a parent. The mother projects the feeling that her child is a negative aspect in her life. The mother's description of her relationship with her child suggests that she sees herself as abused or rejected by the child, or that she is disappointed in and feels alienated from the child. High scores suggest that the parent-child bond is either threatened or has never been adequately established.

From this description we would expect that high scores on the Parent-Child Dysfunctional Interaction subscale would predict the formation of an insecure attachment. Indeed in the subgroup, high scores did predict the formation of an ambivalent attachment. The mother's negative feelings towards the child may mean that her parenting is more authoritarian, and/or insensitive to his or her needs, as she is more concerned with her own negative state of mind. (It is surprising that the avoidant classification was not also associated with higher scores on this subscale - this finding is discussed later).

Ambivalent infant attachment leads to high levels of parenting stress

Alternatively the direction of causation may be slightly different. Although in this study parenting stress was measured 7 months before the Strange Situation was performed, when the 10 month questionnaires were completed, the infant would already have been developing an attachment style.

Mayseless (1998) suggested that the caregiving strategy of mothers of ambivalent infants may *generate* higher levels of parenting stress. It was proposed that their strategy may be characterised by excessive involvement in the maternal role but also by a lack of competency to implement this strategy. The result is anxious maternal involvement coupled with frustration and stress in the maternal role. These suggestions are consistent with the findings of Stevenson-Hinde & Shouldice (1995) that mothers of infants who were classified as ambivalent were more depressed and more anxious than other mothers. They are also consistent with the findings of this study, and those of Scher & Mayseless (2000) and Moss *et al* (1998), where mothers of ambivalent children were found to report significantly more parenting stress on the PSI than mothers of secure children.

Another possibility is that the attachment style of the infant *causes* increased parenting stress. Infants who are later classified as ambivalently attached may be more prone to distress than other infants. Cassidy (1994) proposed that infants in ambivalent relationships may have poor affect regulation. In their meta-analysis, Goldsmith & Alansky (1987) found that distress proneness predicted resistant behaviour (which is a defining feature of an ambivalent attachment) in the Strange Situation. Moran &

Pederson (1998) found that mothers judged to be in ambivalent relationships on the basis of home observations at 12 months reported more fussy and difficult infant behaviours than did mothers in secure or avoidant relationships on the child domain of the PSI.

Thus it could be that, even 7 months before their attachment is classified as ambivalent, these babies are simply more difficult to parent, as they are easily distressed and difficult to placate. The babies themselves may be the source of the parenting stress. However, there are several pieces of evidence that do not fit with this explanation. Firstly *no* significant difference was found in this sample between ambivalent infants and other infants on the Difficult Child subscale of the PSI-SF, which focuses on "the basic behavioural characteristics of children that make them either easy or difficult to manage" (Abidin, 1995, p56). Secondly, research has not yet demonstrated a consistent relationship between measures of temperament and patterns of attachment. Thirdly, in contrast to Goldsmith & Alansky (1987), Moran & Pederson (1998) recently failed to demonstrate a relationship between proneness to distress and attachment as classified in the Strange Situation. Thus it is unlikely that a difficult temperament is the sole explanation for the observed difference in levels of parenting stress.

The finding is an artefact created by the use of self-report measures

The last explanation of the findings was discussed earlier. It may be that the use of self-report measures may be responsible for the findings - the higher levels of parenting stress reported by mothers of ambivalent children may simply represent their tendency to over-report the negative aspects of parenting due to *their own* pre-occupied attachment style.

4.36 Why does poor family functioning predict ambivalent infant attachment in the subgroup with poor family functioning?

The finding that poor levels of family functioning predicted an ambivalent attachment style in the subgroup partially supported hypothesis 2. Thus, as suggested in the literature, clinically significant levels of family functioning appeared to influence the nature of the mother-infant attachment.

The general functioning scale of the Family Assessment Device gives a measure of the overall health/pathology of the family. Mothers who score highly on this measure are thought to be feeling poorly emotionally supported by their families (sample items from this scale include "In times of crisis we can turn to each other for support" and "We cannot talk to each other about the sadness we feel"). The finding that higher scores on this measure are associated with ambivalent attachments fits with previous studies that have found a relationship between poor family functioning and insecure attachment. It appears that mothers who do not perceive support from their families may be less psychologically available to their infants, making them less able to promote secure attachment relationships.

In addition, in this study there was a correlation between family functioning and parenting stress - high levels of parenting stress were associated with poor family functioning i.e. mothers who do not feel supported tend to experience a higher level of parenting stress than those who do perceive support.

4.37 Why isn't the parental stress level of mothers or their family functioning predictive of insecure-avoidant attachment?

The original research hypotheses proposed that high levels of parenting stress and poor family functioning would predict both types of insecure attachment classifications (avoidant and ambivalent), but this pattern was not found in the subgroup analyses. Four possible explanations for this are considered below.

Low levels of parenting stress lead to avoidant infant attachment

Firstly, very low levels of parenting stress could be responsible for the development of an avoidant attachment. There might be a lack of investment in the maternal role, meaning that the mother has a tendency to ignore the child's needs. This would discourage the infant from seeking her attention to fulfill his needs or regulate his emotions, and foster the development of an avoidant attachment style. Mothers of secure infants on average scored higher in terms of parenting stress than mothers of avoidant infants, implying that perhaps a certain amount of parenting stress is necessary to motivate the mother to attend to the child's needs. However, if this explanation were true, we might expect that in the entire sample, a greater than expected proportion of infants would demonstrate an avoidant attachment, as overall, parenting stress levels were low. This was not the case - the proportion of avoidant infants was consistent with previous studies on normal populations.

Avoidant infant attachment leads to low levels of parenting stress

Again the direction of causation could be the other way around. Mothers of avoidant babies may actually experience less stress in the parenting role. Avoidant infants are notable for their independence - their attachment style means that they do not seek comfort from caregivers and rarely cry to get attention from the attachment figure. Thus it could be that children who are developing an avoidant style at 10 months are easier for their mothers to parent. The comparative lack of parenting stress may also underlie the better levels of family functioning - if the mother is not struggling with parenting she may in turn feel adequately supported by her family, or there may simply be less to disagree about.

The finding is an artefact created by the use of self-report measures

Thirdly, as mentioned previously, mothers of avoidant infants could be denying the amount of parenting stress that they endure and/or how poorly their family is functioning. As suggested by Stevenson-Hinde & Shouldice (1995), the lower levels of parenting stress and better family functioning reported by mothers of avoidant children may simply represent an idealising, dismissive stance which contributes to a masking of negative emotions. This claim would be stronger if mothers of avoidant infants showed more 'Defensive Responding' than other mothers on this scale of the PSI-SF. However, post-hoc analysis revealed no differences between groups.

The original hypothesis was incorrect in its assumptions

The hypothesis that insecure attachment would be associated with higher levels of parenting stress was based on studies that had found this relationship when measuring attachment predominantly using the AQS. As this measure is unable to distinguish between different types of insecure attachment, actual differences between ambivalent and avoidant infants may have been masked in these studies. It may be that the higher levels of parenting stress were reported by only the mothers of ambivalent infants, and not by the mothers of both types of insecurely attached infants. Indeed the findings of the current study paralleled those of Moss *et al* (1998), who found that mothers of ambivalent pre-schoolers reported significantly higher levels of parenting stress on the mother domain than both other attachment groups. In fact in their study the mothers of avoidant children reported the lowest mean level of parenting stress. No other study has been able to pull apart the three attachment classifications in the way done in the current study to investigate differences between them. Consequently it may be that the current study has revealed real differences between the parenting stress levels of mothers of different types of insecure infants. These differences may have been previously masked by the use of alternative measures of attachment.

4.4 Key Findings

The next section summarises the key findings from this study.

KEY FINDINGS

- ◆ Overall, despite the relatively large sample size used, maternal parenting stress and family functioning were not found to predict later infant attachment.
- ◆ The failure to confirm the hypotheses may mean that, despite reports of a concurrent relationship in the literature, there is no *predictive* relationship between parenting stress measured in the first year of life and infant attachment in the second year.
- ◆ Alternatively, different processes may operate with high and low levels of parenting stress, as suggested by Deater-Deckard (1998). High levels of parenting stress *did* predict later attachment classification in a subgroup where all members reported above the median normative level of parenting stress. However, levels of parenting stress did not predict later attachment classification in the whole sample, where levels of parenting stress were, on average, much lower.
- ◆ In the high parenting stress subgroup, high scores on total PSI-SF score and Parent-Child Dysfunctional Interaction predicted ambivalent infant attachment. Four possible explanations for this are:
 1. High levels of parenting stress lead to increases in negative, authoritarian parenting, which contributes to the formation of an ambivalent attachment.
 2. Mothers of ambivalent infants have an anxious caregiving style that generates higher levels of parenting stress.

3. Ambivalent infants are more stressful to care for.
 4. Mothers of ambivalent infants over-report the negative aspects of parenting due to their own pre-occupied attachment style.
- ◆ In the poor family functioning subgroup, high scores on the GF-FAD predicted ambivalent infant attachment. It was suggested that mothers who do not feel supported by their families are less psychologically available to their infants, and that this leads to the formation of an ambivalent attachment.
 - ◆ Avoidant classifications were not associated with poor family functioning or high levels of parenting stress. Four possible explanations for this are:
 1. Low levels of parenting stress could be responsible for the formation of an avoidant attachment.
 2. Avoidant infants are not very stressful to care for.
 3. Mothers of avoidant infants under-report the negative aspects of parenting and family functioning due to their own dismissing attachment style.
 4. Previous studies have obscured the fact that mothers of avoidant infants do not demonstrate high levels of parenting stress or poor family functioning by the use of measures of attachment that do not discriminate between avoidant and ambivalent classifications.

4.5 Limitations and ideas for future research

This study failed to show that two maternal and family variables measured in the first year of a child's life were precursors of the formation of an insecure attachment during the child's second year of life. However, it was able to demonstrate a predictive relationship in a subgroup of the participants. The size of this subgroup was such that conclusions drawn from it are at present tentative - more research is needed with a much larger group of mothers with high levels of parenting stress before any of the conclusions can be confirmed or refuted.

It is also possible that important key variables were not measured. It was beyond the scope of this project to measure all the many infant, maternal and contextual factors that have been associated with attachment in the literature, but consequently it is possible that a variable that was not measured might have predicted attachment. For example, given enough time (as it is a very time consuming procedure) the mother's own attachment representation could have been measured using the Adult Attachment Interview (AAI - George, Kaplan & Main, 1985). The effects of this on the child's attachment status could then have been reliably determined and factored out of the analysis to see if parenting stress or family functioning predicted attachment having controlled for this variable. Future studies could use the AAI to attempt to control for maternal reporting style when using self-report questionnaires. The Families, Children and Child Care study is in fact collecting information on parents' own childhoods using the Parental Bonding Instrument (Parker, Tupling & Brown, 1979), which is much shorter to administer than the AAI. It is

hoped that at a later date it will be possible to use this information to investigate the suggestions made here that some of the differences observed in the current study may be due to differences in the mothers' own attachment styles.

Another limitation of this project is that it focused on the relationship between mothers and their infants. Data from fathers were not included in the analysis, despite the fact that fathers are important both in terms of parenting and family functioning. For example, it may be that *paternal* levels of parenting stress affect mother-infant attachment as much as maternal levels. In this study this information was not collected. However, in the main Families, Children and Child Care study some data on paternal factors are being collected, and so it will be possible to address some of these questions at a later date.

Future research in this area may want to look further into whether different processes are in fact operating in families with high levels of parenting stress compared to those with low levels. It would be of interest to conduct a study using the same measures as were used in the current study but with two pre-selected groups of participants (mothers who report high levels of parenting stress and mothers who report low levels of parenting stress) to further investigate this idea.

4.6 Clinical and service implications

This study is an attempt to discover whether parenting stress or poor family functioning represent psychosocial risk factors for the development of an insecure attachment. An

insecure attachment has been shown in itself to be a risk factor for later behavioural problems, such as conduct disorder. On the other hand, a secure attachment is said to provide the child with the resilience, trust and ability to regulate his/her own emotions and develop the self-reflective capacities necessary for dealing with adverse life events (Fonagy, Steele, Steele & Target, 1997). The implications of this study therefore primarily relate to social policy and preventative interventions - social policy makers should be concerned with what can be done to foster the development of a secure mother-infant attachment relationship, and prevent the development of an insecure one.

Preventing insecure attachment formation may prove to be highly cost effective. For example, according to Carr (1999), conduct problems constitute a third to a half of all referrals to child and family clinics, and "are the single most costly disorder of childhood and adolescence" (p315). If some of the children at risk of developing conduct disorders could be prevented from doing so, costly intervention with them at a later date would no longer be necessary.

The Health Select Committee (1997) proposed that the attachment paradigm be adopted as a framework for the development of primary prevention and early intervention. If the results of this study were adequately replicated, they could be used in such a way. The finding that, above a certain threshold, high levels of parenting stress and poor family functioning are both predictive of an ambivalent attachment imply that the PSI-SF and the GF-FAD could be used as screening measures. Mothers scoring above the threshold on either measure could be identified as at greater risk of developing an ambivalent

attachment with their infants, and could be offered some kind of intervention. As infants have formed attachments by their second year, it is important to 'get in early' with preventative measures, for example, trying to reduce parenting stress or improve family functioning during the first year of life in order to prevent the later development of insecure attachments.

4.61 Early intervention

Several clinicians have designed interventions that aim to reduce parenting stress and thereby promote the formation of a secure attachment (e.g. Armstrong, Fraser, Dadds & Morris, 2000; Cohen, Muir, Parker, Brown, Lojkasek, Muir & Barwick, 1999; Cowen, 1998; Erickson-Warfield, Hauser-Cram, Wyngaarden-Krauss, Shonkoff & Upshur, 2000; Williams, 1998). The interventions vary from weekly home visits to Head Start programs to infant-led psychotherapy. The results have been mixed - for example Armstrong *et al's* (2000) home visiting intervention reduced parenting stress compared to controls at 4 months of age but this effect was not seen at 12 months. Erickson-Warfield *et al* (2000) found that early intervention services did not have a significant impact on parenting stress. However Cowen (1998) found a significant improvement in scores on the PSI-SF following their crisis child care intervention. Cohen *et al's* (1999) Watch, Wait and Wonder program not only decreased parenting stress by the end of treatment but also led to a shift toward a more secure attachment relationship with the mother.

One other home visiting intervention was designed to improve aspects of family functioning (Heinicke, Fineman, Ruth, Recchia, Guthrie & Rodning, 1999). The authors

completed a randomised trial of a relationship-based early intervention with mothers who were defined as at risk for inadequate parenting before their child's birth. The primary risk characteristics were poverty and a lack of support (so we can hypothesise that these mothers *might* have scored above the cut-off on the GF-FAD). The mothers in the intervention group scored significantly higher on measures of their experienced partner and family support when the infant reached one year of age. The intervention also had the desired effect on attachment - children in the intervention group were more secure as measured by the Strange Situation than children in the control group. Hence some interventions are effective at reducing the risk of the development of an insecure attachment. Such interventions could be offered as primary prevention/ early intervention services for families who are found to be at risk of developing insecure attachments.

4.62 Implications for adult services

The formation of an insecure attachment in childhood also has implications for adult life. As previously mentioned, our primary attachment relationship provides us with an internal working model of the self and others that continues to exert an influence on relationships throughout our life. Disturbances of the primary relationship have been linked with problems in adulthood such as agoraphobia (Liotti, 1996), borderline personality disorder (Fonagy, 1999) and depression (Harris & Bifulco, 1996). Consequently, preventing disturbances of this relationship would have implications for adult services as well as child services. Mental health problems in later life may be avoided by having an experience of a secure attachment relationship in childhood.

Lastly, the possible link between poor family functioning and ambivalent attachment is of particular relevance to family therapy. Family therapists sometimes use the attachment paradigm in their work by providing a secure base for families to reconnect with old memories that are resonating with current themes (e.g. Byng-Hall, 1996). It is then possible to provide a new experience of being understood and responded to, both by the therapist and other family members. Family members are then able to create new working models of relationships. The provision of this experience may be crucial for families with poor family functioning, as without it, their children may be inevitably saddled with an ambivalent attachment pattern for the rest of their lives.

4.7 Conclusions

This study sheds new light on this area of research. It failed to confirm hypotheses set on the basis of previous research, indicating that the relationship between parenting stress and attachment may not be as straightforward as previously thought. It provided some support for the idea that different processes operate at high and low levels of parenting stress. Parenting stress and attachment may be related prospectively in mothers whose stress levels are in the moderate-to-high range, but not in mothers with low levels of parenting stress. Several possible explanations of the findings have been discussed, but at present it is impossible to say which is the most likely until further empirical work has been done. If suitably replicated, the findings of this study are of clinical relevance as they could be used to help prevent the formation of insecure infant attachments.

Section 5

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Section 6

APPENDICES

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